ORDER NO. ARD-8002010C

Service Manual

Cassette Deck

RS-M24

(Silver Face / Black Face)

Metal Tape-Compatible Cassette Deck with
Soft Touch Operation and FL-Meter with Peak Hold

DOLBY SYSTEM

This is the Service Manual for the following areas.

- [B] ····· For United Kingdom.
- [N] ····· For Asia, Latin America, Middle East and Africa areas.
- [A] ····· For Australia.
- [F] ····· For Asian PX.
- [J] ····· For European PX.

RS-M24 MECHANISM SERIES

Specifications

Track system:	4-track 2-channel stereo recording and playback
Tape speed:	4.8 cm/s (1-7/8 ips.)
Wow and flutter:	0.05% (WRMS), ±0.14% (DIN)
Frequency response:	Metal tape; 20—18,000 Hz 30—17,000 Hz (DIN) 30—16,000 Hz ±3 dB
	CrO_2/Fe-Cr tape; 20—18,000 Hz 30—16,000 Hz (DIN) 30—16,000 Hz ±3 dB
	Normal tape; 20—17,000 Hz 30—15,000 Hz (DIN) 30—14,000 Hz ±3 dB
Signal-to-noise ratio:	Dolby* NR in; 67 dB (above 5 kHz) Dolby NR out; 57 dB (signal level = max. recording level, Fe-Cr/CrO_2 type tape)
Fast forward and rewind time:	Approx. 90 seconds with C-60 cassette tape
Inputs:	MIC; sensitivity 0.25 mV, input impedance 46 kΩ for United Kingdom and Australia. 35 kΩ for Asia, Latin America, Middle East, Africa areas and PX. applicable microphone impedance 400Ω—10 kΩ LINE; sensitivity 60 mV, input impedance 40 kΩ
Outputs:	LINE; output level 700 mV, output impedance 1.5 kΩ or less load impedance 22 kΩ over HEADPHONE; output level 80—350 mV, load impedance 8—125Ω
Rec/Pb connection:	5 P DIN type; input sensitivity 0.25 mV, impedance 5.9 kΩ output level 700 mV, impedance 5.2 kΩ
Bias frequency:	90 kHz
Motor:	Electrical DC governor motor
Heads:	2-head system; 1-MX head for record/playback 1-sendust/ferrite double-gap head for erasure
Power requirements:	AC; 110/125/220/240 V, 50-60 Hz Preset power voltage; 125 V (for Asian PX.) 220 V (for European PX.) 240 V (for United Kingdom.)
Power consumption:	28 W (for United Kingdom and Australia.) 14 W (for Asia, Latin America, Middle East, Africa areas and PX.)
Dimensions:	43.0 cm(W) × 11.9 cm(H) × 28.2 cm(D) [16-7/8"(W) × 4-3/4"(H) × 11-1/8"(D)]
Weight:	5 kg (11 lbs)

Specifications are subject to change without notice.

* 'Dolby' and the double-D symbol are trademarks of Dolby Laboratories.

Technics

Panasonic Tokyo
Matsushita Electric Industrial Co., Ltd.
17-15, 6-chome, Shinbashi, Minato-ku, Tokyo 105 Japan

Matsushita Electric Trading Co., Ltd.
P.O. Box 288, Central Osaka Japan

CONTENTS

LOCATION OF CONTROLS AND COMPONENTS

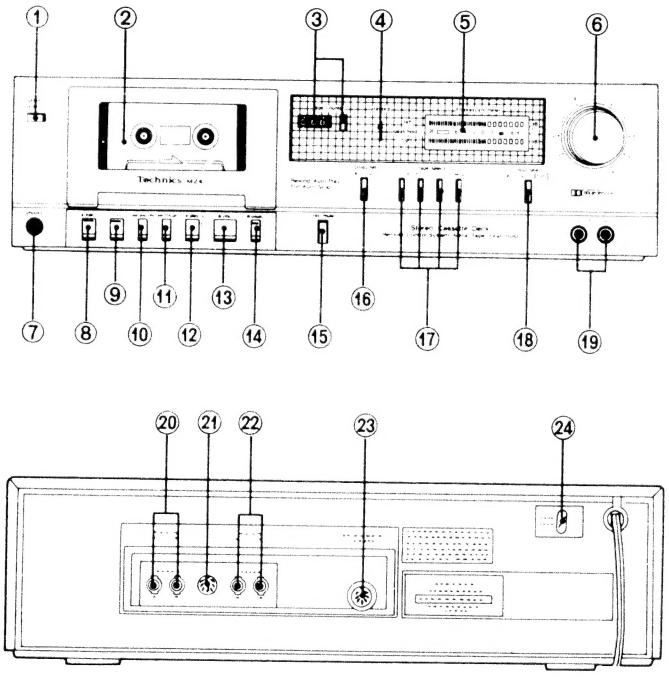


Fig. 1

① **Power switch (power)**
② **Cassette holder**
③ **Tape counter and Reset button (tape counter)**
④ **Record indication lamp (record)**
⑤ **FL (fluorescent level) meters**
⑥ **Input level controls (input level) (L → R)**
⑦ **Headphones jack (phones)**
⑧ **Eject button (▲ eject)**
⑨ **Record button (○ rec)**
⑩ **Rewind/Review button (◀◀ rew/rev)**
⑪ **Fast forward/Cue button (▶▶ ff/cue)**
⑫ **Play button (▶ play)**
⑬ **Stop button (■ stop)**
⑭ **Pause button (II pause)**
⑮ **Record-muting button (rec mute)**
⑯ **Dolby noise-reduction switch (Dolby NR)**
⑰ **Tape selector (tape select-normal/Fe-Cr/CrO_2/Metal)**
⑱ **Input selector (input select)**
⑲ **Microphone jacks (L mic R)**
⑳ **Line output jacks (LINE OUT) (R·L)**
㉑ **Record/Playback connection socket (REC/PLAY)**
㉒ **Line input jacks (LINE IN) (R·L)**
㉓ **Remote-control connector (REMOTE CONTROL)**
㉔ **Voltage selector (VOLTAGE SELECTOR)**

DISASSEMBLY NOTE:

MECHANISM SECTION

1. For repair, measurement or adjustment with the mechanism removed from the unit be sure to ground the lower base plate of the mechanism.
2. For grounding, connect a extention cord to the mechanism's lower base plate and the lug terminal from amplifier printed circuit board.
3. Without grounding, the amplifier does not operate properly.

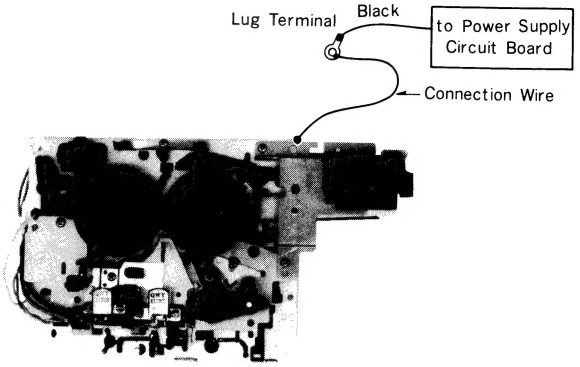


Fig. 7

ASSEMBLY INSTRUCTIONS

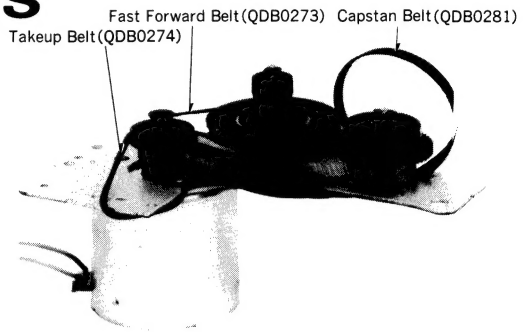


Fig. 8

• Belt mounting

Check that each belt is free of damage or grease on the surface, after that, set the belt as illustrated, and mount it on the lower base plate (QXK2276) after setting the takeup belt (QDB0274) on the fast forward belt pulley (QXP0607).

• Positioning the Takeup Reel Table Assembly

When installing the takeup reel table assembly, be sure to mount the auto-stop friction hub (shown in Fig. 9-b.), as illustrated in Fig. 9-a. If the takeup reel table is positioned incorrectly at any place other than that shown in Fig. 9-a, the auto-stop mechanism remains operative at all times.

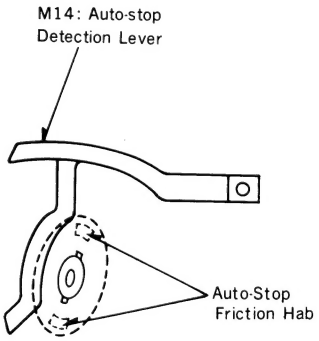


Fig. 9-a

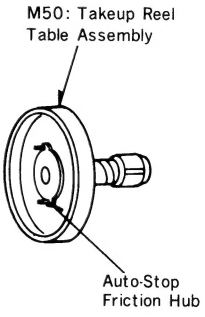


Fig. 9-b

DISASSEMBLY INSTRUCTIONS

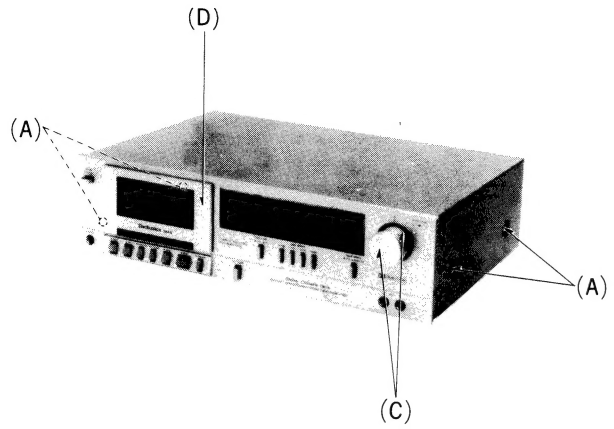


Fig. 2

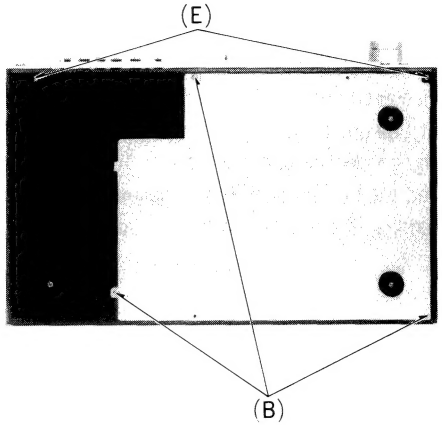


Fig. 3

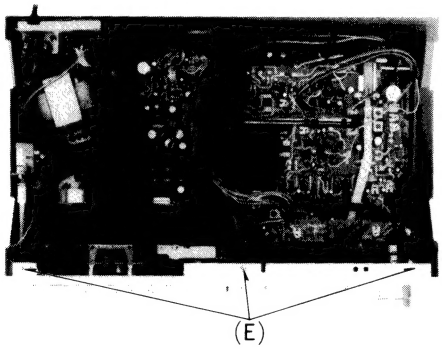


Fig. 4

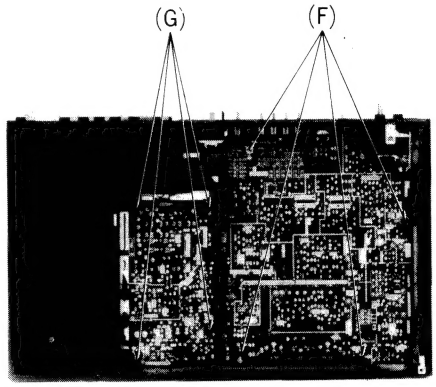


Fig. 5

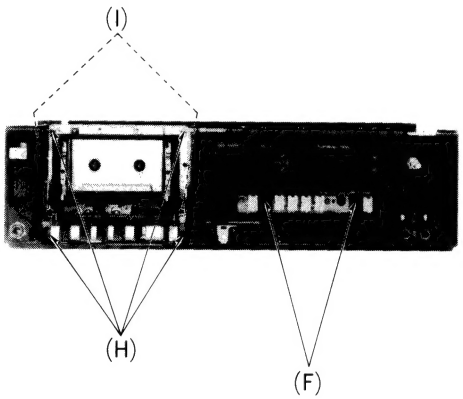


Fig. 6

Procedure	To remove —— .	Remove —— .	Shown in fig. —— .
1	Case cover	• 4 screws ····· (A)	2
1	Bottom cover	• 3 screws ····· (B)	3
2	Front panel	• Control knob ····· (C) • Cassette lid ····· (D) • 5 screws ····· (E)	2 2 3, 4
2	Main circuit board	• 6 red screws ····· (F)	5, 6
2	Power supply circuit board	• 4 red screws ····· (G)	5
3	Mechanism	• 4 screws ····· (H)	6
4	Operation button assembly and cassette holder	• 2 screws ····· (I)	6

• Mounting the Operation Button Assembly

Before mounting the operation button assembly on the mechanism body, be sure to lift the main control lever in the direction of the arrow using a screwdriver, as shown in Fig. 9-c, until it locks in place. If it is not mounted in this manner, the hub of the playback button assembly during playback catches on the main control lever, making it impossible to release playback mode.

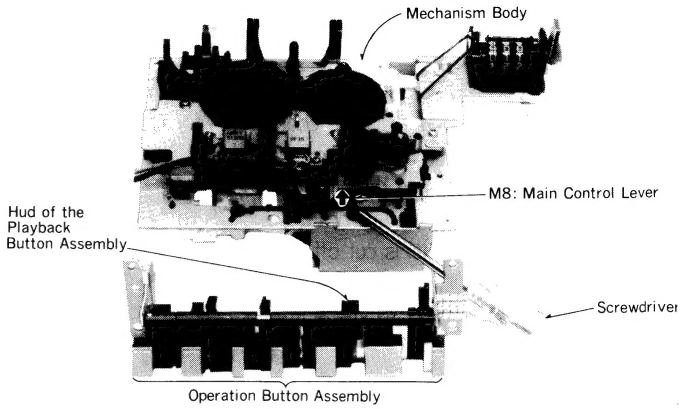
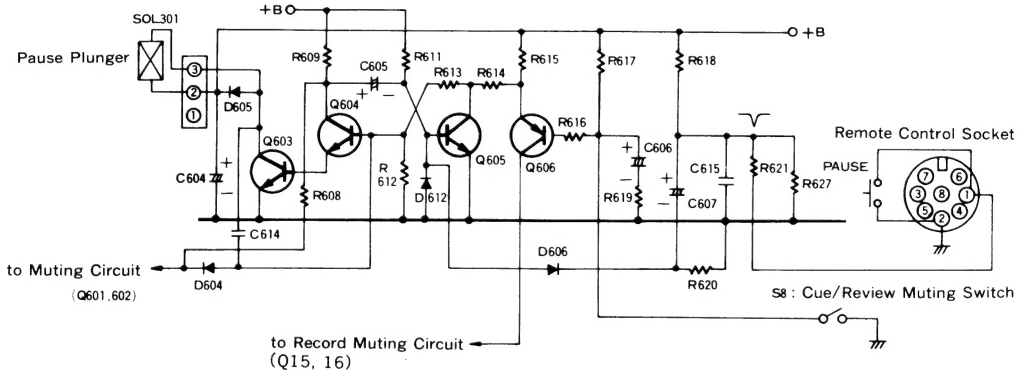


Fig. 9-c

OPERATING PRINCIPLE OF REMOTE CONTROL

Pause mode



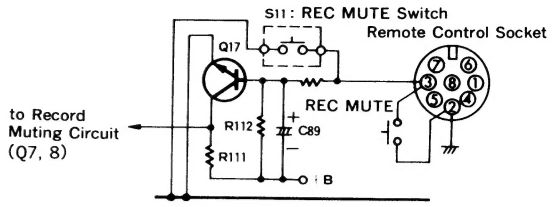
1. In record and playback mode, Q604 is OFF and Q605 is ON in the monostable multivibrator circuit.
2. When the pause button on the remote control unit is pressed and a negative pulse is momentarily applied to R621 through socket 1.
3. C607 starts discharging, causing the base potential of Q605 to decrease, and Q605 is turned OFF and Q604 ON (Both Q605 and Q604 are inverted.). This causes C605 to discharge.
4. Q604 is ON, causing Q603 to be ON, whereby pause plunger is attracted to change the pause mechanism to a lock condition.
5. Base potential of Q605 increases afterward, causing Q605 to be ON and Q604 OFF, and Q603 also OFF, and the attraction of pause plunger is released. Even when the pause plunger is released, the pause mechanism is locked and remains paused.
6. For pause release, when the pause button is the remote control unit is pressed again to repeat operations 1 — 4 causing pause plunger to refunction, thus releasing locked pause. After that, operation of 5 is effected, causing the pause plunger to return to its original condition.

REC MUTE mode

1. When REC MUTE button on the remote control unit is pressed, base bias of Q17 becomes (L) for Q17 to be OFF while the button remains pressed.
2. Q17 is OFF, causing the collector to becomes (H), and recording muting, transistors Q7 and Q8 to be ON, whereby the recording signal is cut off.

NOTE:

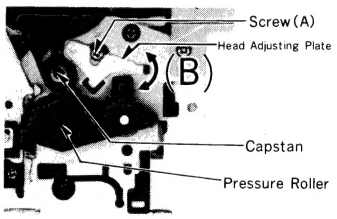
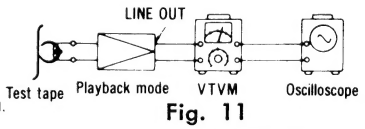
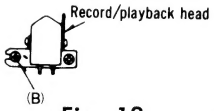
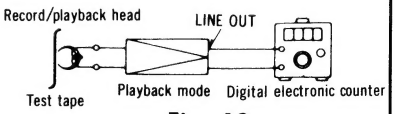
(H) : Hight Potential
(L) : Low Potential

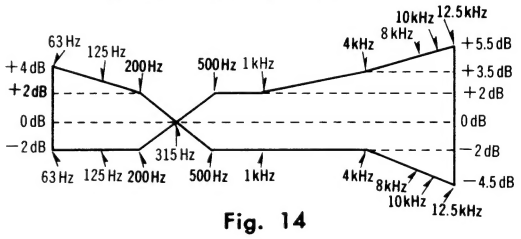
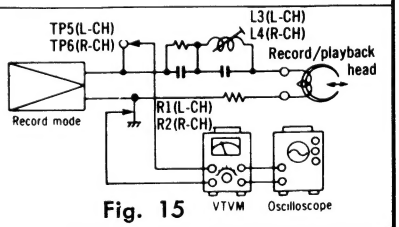
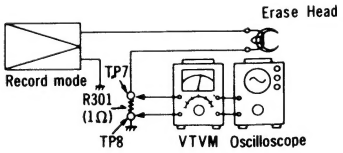


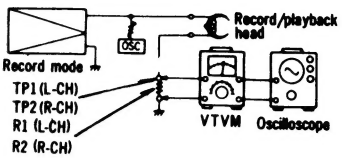
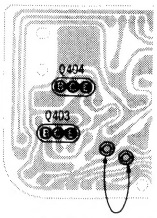
MEASUREMENT AND ADJUSTMENT METHODS

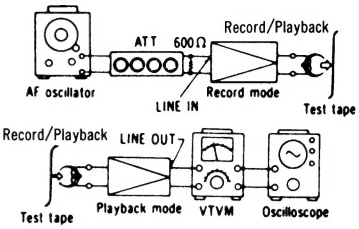
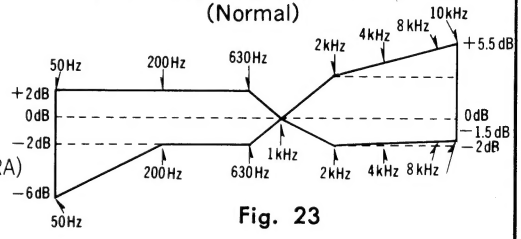
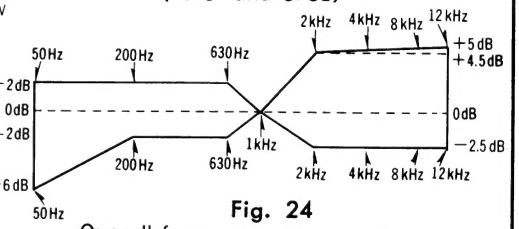
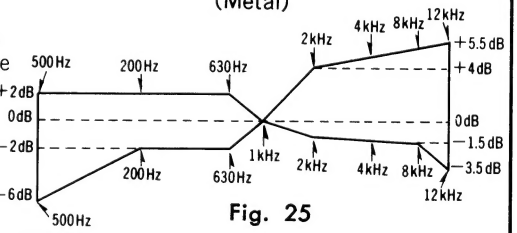
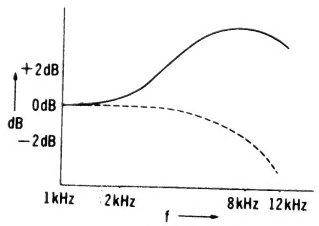
NOTES: Keep good condition, set lever switches and controls in the following positions, unless otherwise specified.

- Make sure heads are clean.
- Make sure capstan and pressure roller are clean.
- Judgeable room temperature: 20±5°C (68±9°F)
- Dolby NR switch: OUT
- Tape selector: Normal position
- Input selector: Line in
- Input level control: Maximum

ITEM	MEASUREMENT & ADJUSTMENT
Ⓐ Head position adjustment Condition: * Playback and pause mode	(The head adjusting plate is provided to adjust the tape touch of the head in cue or review mode.) 1. Press the playback button and pause button. 2. Measure the space between the pinch roller and the capstan. **Standard value: 0.5±0.3cm** 3. If the measured value is not within the standard value, untighten screw (A), and slide the head adjusting plate in the direction of arrow (B) for adjustment.  **Fig. 10**
Ⓑ Head azimuth adjustment Condition: * Playback mode Equipment: * VTVM * Oscilloscope * Test tape (azimuth) ··· QZZCFM	1. Test equipment connection is shown in fig. 11. 2. Playback azimuth tape (QZZCFM 8kHz). 3. Adjust record/playback head angle adjustment screw (B) in fig. 12 so that output level at LINE OUT becomes maximum. 4. Measure both channels, and adjust levels for equal output. 5. After adjustment lock head adjustment screw with lacquer.  **Fig. 11**  **Fig. 12**
Ⓒ Tape speed Condition: * Playback mode Equipment: * Digital electronic counter or frequency counter * Test tape ··· QZZCWAT	Tape speed accuracy 1. Test equipment connection is shown in fig. 13. 2. Playback test tape (QZZCWAT 3,000Hz), and supply playback signal to frequency counter. 3. Measure this frequency. 4. On the basis of 3,000Hz, determine value by following formula: $\text{Tape speed accuracy} = \frac{f - 3{,}000}{3{,}000} \times 100\ (\%)$ where, f = measured value 5. Take measurement at middle section of tape. **Standard value: ±1.5%**  **Fig. 13**

ITEM	MEASUREMENT & ADJUSTMENT
	Adjustment method 1. Playback the test tape (middle). 2. Adjust so that frequency becomes 3,000 Hz. 3. Tape speed adjustment VR shown in fig. 27. **Tape speed fluctuation** Make measurements in same manner as above (beginning, middle and end of tape), and determine the difference between maximum and minimum values and calculate as follows: $\text{Tape speed fluctuation} = \frac{f_1 - f_2}{3{,}000} \times 100\ (\%)$ f_1 = maximum value, f_2 = minimum value **Standard value: 1%**
Ⓓ Playback frequency response Condition: * Playback mode Equipment: * VTVM * Oscilloscope * Test tape ··· QZZCFM	1. Test equipment connection is as same as "Head azimuth adjustment" but use the test tape instead of head azimuth tape (See fig. 11). 2. Place UNIT into playback mode. 3. Playback frequency response test tape. 4. Measure output level at 12.5 kHz, 10 kHz, 8 kHz, 4 kHz, 1 kHz, 315 Hz, 250 Hz, 125 Hz and 63 Hz, and compare each output level with standard frequency 315 Hz, at LINE OUT. 5. Make measurement for both channels. 6. Make sure that the measured value is within the range specified in the frequency response chart. **Playback frequency response chart**  **Fig. 14**
Ⓔ Playback gain Condition: * Playback mode Equipment: * VTVM * Oscilloscope * Test tape ··· QZZCFM	1. Test equipment connection is shown in fig. 11. 2. Playback standard recording level portion on test tape (QZZCFM 315 Hz), and using VTVM measure the output level at LINE OUT jack. 3. Make measurement for both channels. **Standard value: around 0.7 V** **Adjustment** 1. If measured value is not standard, adjust VR3 (L-CH), VR4 (R-CH) (See fig. 27 on page 8). 2. After adjustment, check "Playback frequency response" again.
Ⓕ Bias leak Condition: * Record mode Equipment: * VTVM * Oscilloscope	1. Test equipment connection is shown in fig. 15. 2. Place UNIT into record mode. 3. Adjust trap coil L3 (L-CH), L4 (R-CH) so that measured value on VTVM becomes minimum. 4. Take adjustment for both channels.  **Fig. 15**
Ⓖ Erase current Condition: * Record mode * Tape selector ··· Metal position ··· CrO_2 position ··· Fe-Cr position ··· Normal position Equipment: * VTVM * Oscilloscope	1. Test equipment connection is shown in fig. 16. 2. Press the record and pause buttons. 3. Set the tape selector to metal position. 4. Read voltage on VTVM and calculate erase current by following formula: $\text{Erase current (A)} = \frac{\text{Voltage across both ends of R301}}{1\ (\Omega)}$ **Standard value: 110±10 mA (Metal position)** 5. If measured value is not within standard, adjust VR301. 6. Set the tape selector to each position. 7. Make sure that the measured value is within standard. **Standard value: around 65 mA (CrO_2 position), around 55 mA (Fe-Cr position), around 50 mA (Normal position)**  **Fig. 16**

ITEM	MEASUREMENT & ADJUSTMENT
❽ Bias current Condition: * Record mode * Tape selector ··· Metal position ··· Normal position ··· Fe-Cr position ··· CrO_2 position Equipment: * VTVM * Oscilloscope	**A. Measurement and adjustment for metal position.** 1. Test equipment connection is shown in fig. 17. 2. Press the record and pause buttons. 3. Set the tape selector to metal position. 4. Read voltage on VTVM and calculate bias current by following formula: $\text{Bias current (A)} = \frac{\text{Value read on VTVM (V)}}{10\ (\Omega)}$ **Standard value: 800±20μA (Metal position)**  **Fig. 17** 5. If measured value is not within standard, adjust VR303 (L-CH), VR304 (R-CH). **B. Measurement and adjustment for normal position.** 1. Change the tape selector to normal position. 2. Make sure that the measured value is within standard. **Standard value: around 370μA (Normal position)** 3. If measured value is not within standard, adjust VR302 (L-CH), VR304 (R-CH). **C. Measurement for Fe-Cr and CrO_2 position.** 1. Set the tape selector to each position. 2. Make sure that the measured value is within standard. **Standard value: around 390μA (Fe-Cr position), around 500μA (CrO_2 position)**
❶ Fluorescent meter Condition: * Record mode * Input level control ··· MAX * Tape selector ··· Normal position Equipment: * VTVM * AF oscillator * ATT	1. Test equipment connection is shown in fig. 22. 2. As shown in fig. 18, connecting the collector and ground of Q21 stops the oscillation of the astable multivibrator comprising Q403 and Q404. 3. Supply 1kHz signal (−24dB) to the LINE IN jack, then press the record and pause buttons. 4. Adjust the ATT so that the output level at LINE OUT jack becomes 0.7V (Then input level at this condition is termed the standard input level.). 5. Adjustment at "−20dB": A. Adjust the ATT so that input level is −20dB below standard recording level. B. Adjust VR401 so that the −20dB segment lights up in the −20±0.8dB range (L-CH only) (See fig. 19). 6. Adjustment at "0dB": A. Adjust the ATT so that the output level at LINE OUT jack becomes 0.7V (=standard input level). B. Adjust VR402 so that the +1dB segment lights up in the 0±0.2dB range of the standard input level (See fig. 20). 7. Repeat twice between steps 5 and 6 above. 8. Adjust ATT and check that all segments light up when an input signal level is increased to 10dB higher than the standard input level (See fig. 21). FL METER CIRCUIT BOARD  PEAK HOLD OFF **Fig. 18**  **Fig. 19**  **Fig. 20**  **Fig. 21**
❷ Dolby NR circuit Condition: * Record mode * Input level control ··· MAX Equipment: * VTVM * AF oscillator * ATT * Oscilloscope	1. Place UNIT into record mode, set the Dolby NR switch to OUT position and supply to LINE IN to obtain −34.5dB at TP9 (L-CH), TP10 (R-CH) (frequency 5kHz). 2. Confirm that the value at IN position is 8(±2.5)dB greater than the value at OUT position of Dolby NR switch.

ITEM	MEASUREMENT & ADJUSTMENT
Ⓚ Overall gain Condition: * Record/playback mode * Tape selector ··· Normal position * Input level control ··· MAX * Standard input level; MIC····· −72±4dB LINE IN····· −24±4dB Equipment: * VTVM * AF oscillator * ATT * Oscilloscope * Test tape (reference blank tape) ··· QZZCRA for Normal	1. Test equipment connection is shown in fig. 22. 2. Place UNIT into record mode, and tape selector to normal position. 3. Supply 1kHz signal (−24dB) from AF oscillator, through ATT to LINE IN. 4. Adjust ATT until monitor level at LINE OUT becomes 0.7V. 5. Using test tape, make recording. 6. Playback recorded tape, and make sure the value at LINE OUT on VTVM becomes 0.7V. 7. If measured value is not 0.7V, adjust VR5 (L-CH), VR6 (R-CH) (See fig. 27 on page 8). 8. Repeat from step 2.  **Fig. 22**
Ⓛ Overall frequency response Condition: * Record/playback mode * Input level control ··· MAX * Tape selector ··· Normal position ··· Fe-Cr position ··· CrO_2 position ··· Metal position Equipment: * VTVM * AF oscillator * ATT * Test tape (reference blank tape) ··· QZZCRA for Normal ··· QZZCRY for Fe-Cr ··· QZZCRX for CrO_2 ··· QZZCRZ for Metal	**Note:** Before measuring and adjusting make sure of the playback frequency response. (For the method of measurement, please refer to the playback frequency response.) 1. Test equipment connection is shown in fig. 22. 2. Load reference blank normal test tape (QZZCRA) and place UNIT into record mode. 3. Set the tape selector to normal position. 4. Supply 1kHz signal from AF oscillator through ATT to LINE IN. 5. Adjust ATT so that input level is −20dB below standard recording level (standard recording level ····· −24dB). 6. At this time, LINE OUT level indicates 0.07V. 7. Record each frequency 50Hz, 100Hz, 200Hz, 1kHz, 2kHz, 4kHz, 8kHz and 10kHz (12kHz for CrO_2, Fe-Cr and Metal tape) at the same level. 8. Playback and express in dB the difference the between playback output level of each frequency based on playback output level of 1kHz. 9. Make sure that the measured value is within the range specified in the overall frequency response chart for normal tape shown in fig. 23. 10. If measured value is not within standard, adjust bias current. VR302 ····· L-CH, VR304 ····· R-CH **Note:** • L-CH adjustment is made as much as by using VR302. For further L-CH adjustment, use VR303. • When the frequency response between the middle and high frequency range becomes higher than the standard value, as shown by the solid line in fig. 26 increase, refer to bias current adjustment. • When it becomes lower, as shown by dotted line, refer to bias current adjustment. (For the method of bias current measurement, refer to "Bias current adjustment" on page 5.) 11. Repeat from step 2. 12. Change test tape to Fe-Cr (QZZCRY), CrO_2 (QZZCRX) and Metal (QZZCRZ). 13. Set the tape selector to each position. 14. Measure as same as manner above. 15. Make sure that the measured value is within the range specified in the overall frequency response chart for Fe-Cr, CrO_2 and Metal tape shown in fig. 24 and fig. 25. Overall frequency response chart (Normal)  **Fig. 23** Overall frequency response chart (Fe-Cr and CrO_2)  **Fig. 24** Overall frequency response chart (Metal)  **Fig. 25**  **Fig. 26**

RS-M24

ADJUSTMENT PARTS LOCATION

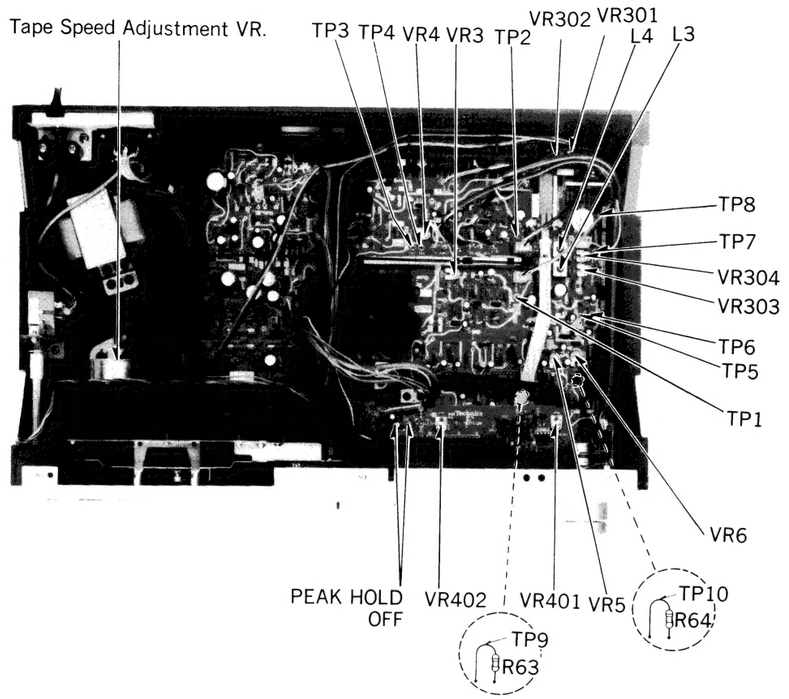
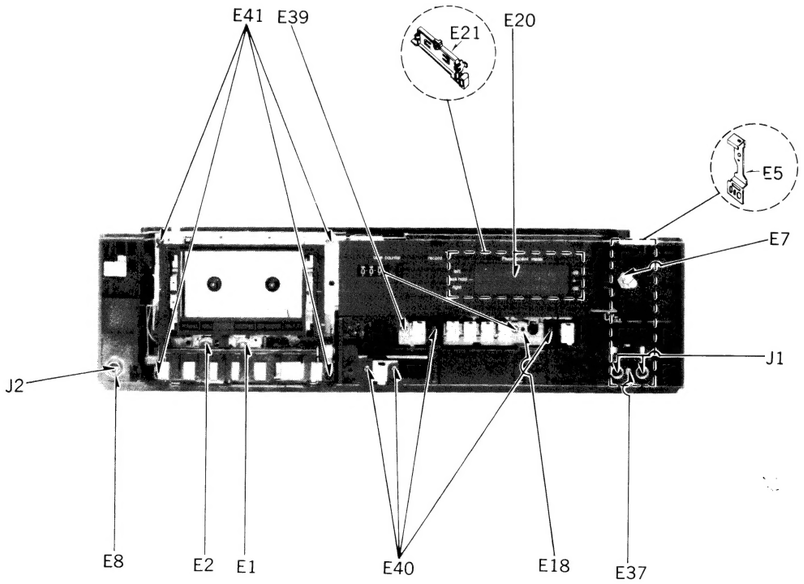
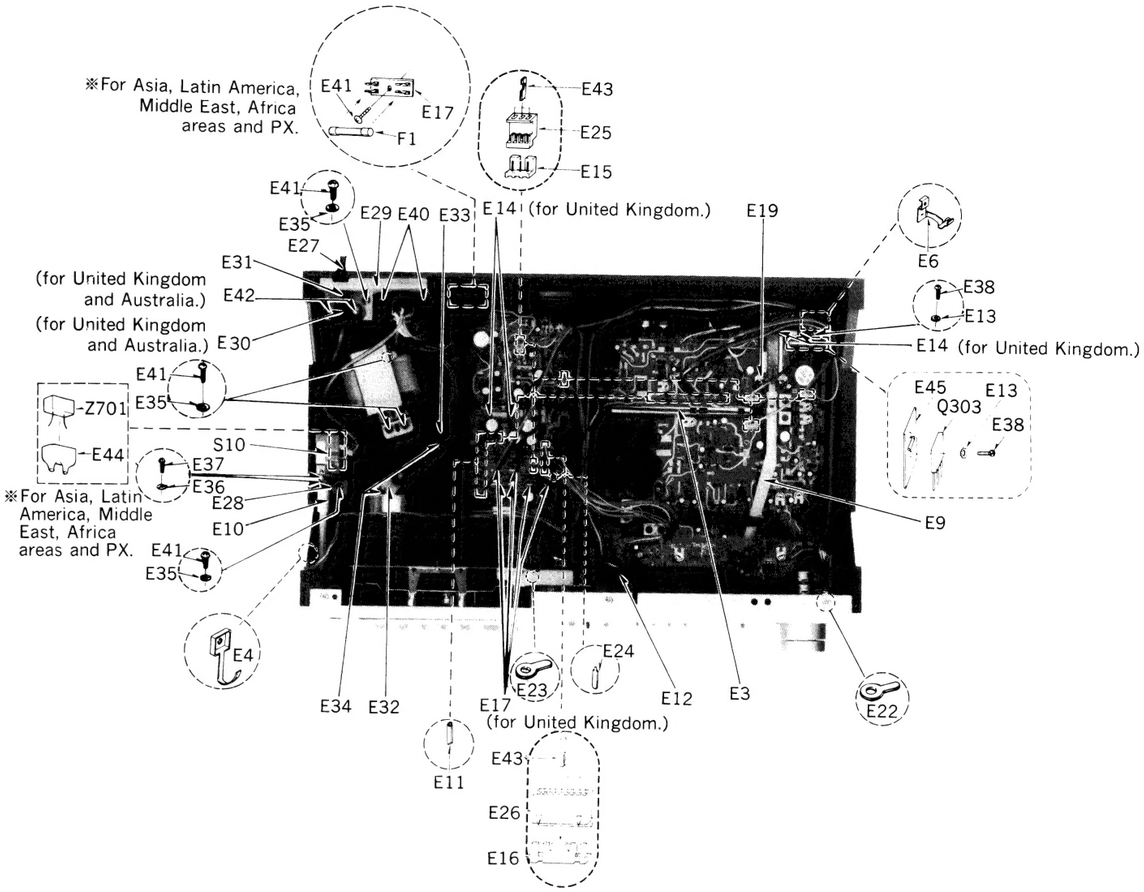


Fig. 27

ELECTRICAL PARTS LOCATION





NOTE: ⚠ indicates that only parts specified by the manufacturer be used for safety.

Ref. No.	Part No.	Part Name & Description
	ELECTRICAL PARTS	
E1	QWY4122Z	Record/Playback Head
E2	QWY2133Z	Erase Head
E3	QBS1127	Recording Wire
E4	QJC0026	Earth Plate-A
E5	QJC0027	Earth Plate-B
E6	QJC0028	Earth Plate-C
E7	QNQ1039	Nut 9φ
E8	QNQ1070	Nut 12φ
E9	QMR1828	Switch Rod-A
E10	QMR1829	Switch Rod-B
E11	QJT1041	Check Pin
E12	XAMQ23P300N	Pilot Lamp
E13	XWG26	Washer
E14 B	QZE0003	Porcelain Tube
※For United Kingdom.		
E15	QJP1921TN	3 Pin Post
E16	QJP1923TN	9 Pin Post
E17 B ⚠	QTF1054	Fuse Holder
※For United Kingdom.		
NPJ ⚠	QTF1049	"
※For Asia, Latin America, Middle East, Africa areas and PX.		

Ref. No.	Part No.	Part Name & Description
E18	QMA3881	Switch Angle-A
E19	QMA3880	Switch Angle-B
E20	QSIFL001F	FL Meter
E21	QKJ0391	Level Meter Holder
E22	QJT1022	Lug Terminal
E23	QJT0015	"
E24	QJT0055	Connector Terminal
E25	QJS1921TN	3 Pin Socket
E26	QJS1923TN	9 Pin Socket
E27 B ⚠	QFC1205M	AC Power Cord
※For United Kingdom.		
NPJ ⚠	QFC1203M	"
※For Asia, Latin America, Middle East, Africa areas and PX.		
A ⚠	QFC1208M	"
※For Australia.		
E28	QMA3882	Switch Angle-C
E29	QMA3879	Power Switch Angle
E30 BTA	QTD1164	Cord Clamper
※For United Kingdom and Australia.		
E31 BTA	QBJ1425	Cord Bushing
※For United Kingdom and Australia.		
NPJ	QTD1129	"
※For Asia, Latin America, Middle East, Africa areas and PX.		

Ref. No.	Part No.	Part Name & Description
E32	QML3611	Recording Lever-A
E33	QML3612	Recording Lever-B
E34	XUB5FT	Stop Ring 5φ
E35	XWA3B	Washer
E36	XWA26B	"
E37	XSN3+6S	Screw +3×6
E38	XSN26+8	Screw +2.6×8
E39	XTN3+6B	Tapping Screw +3×6
E40	XTN3+8B	Tapping Screw +3×8
E41	XTN3+10B	Tapping Screw +3×10
E42 BTA	XTN3+25B	Tapping Screw +3×25
※For United Kingdom and Australia.		
E43	QJT1054	Contact
E44 NPJ	QTW1118	Spark Killer Cover
※For Asia, Latin America, Middle East, Africa areas and PX.		
E45	QTH1118	Heat Sink

RS-M24

SCHEMATIC DIAGRAM

16V100
(for United Kingdam.)
16V47
(for Asia, Latin America, Middle East, Africa areas, Australia and PX.)

Q3
2SC1327
EQUALIZER

Q1, 2, 4
2SD661
EQUALIZER

Q5, 6
2SD636
EQUALIZER SELECT

IC1
NE646B
DOLBY NR IC

Q7
2SD636
RECORD MUTE

Q9
2SD636H
RECORD AMP

Q11
2SD636H
LINE AMP

Q15
2SD636
CUE/REVIEW MUTE

Q13
2SD965
LINE MUTE

Q401, 402
2SC1684
METER MUTE

Q403, 404
2SC1684
ASTABLE MULTIVIBRATOR

IC402
AN6870
METER DRIVE IC

IC401
AN6552
METER AMP

RECORD /PLAYBACK SOCKET

RECORD/PLAYBACK HEAD (LCH)

RECORD/PLAYBACK HEAD (RCH)

MICROPHONE JACK (LCH)

MICROPHONE JACK (RCH)

LINE IN (LCH)

LINE IN (RCH)

LINE OUT(LCH)

LINE OUT(RCH)

FL METER

HEADPHONES JACK

3.3K
(for United Kingdam.)
2.2K
(for Asia, Latin America, Middle East, Africa areas, Australia and PX.)

Q501
2SD636
HEADPHONES AMP
Q503
2SC1684 (2SD636)
HEADPHONES AMP
Q505
2SA564 (2SB641)
HEADPHONES AMP

39 (for United Kingdam.)
82 (for Asia, Latin America, Middle East, Africa areas, Australia and PX.)

REMOTE CONTROL SOCKET

16V100
(for United Kingdam.)
16V47
(for Asia, Latin America, Middle East, Africa areas, Australia and PX.)

Q303
For Asia, Latin America, Middle East, Africa areas, Australia and PX.

ERASE HEAD

For United Kingdam.

PILOT LAMP

Q301, 302
2SD592
BIAS OSC

Q303
2SD946
REGULATOR

Q18
2SC1684 (2SD636)
BIAS OSC ON/OFF

Q601
2SC1684 (2SD636)
MUTING ON/OFF

Q602
2SB641
MUTING ON/OFF

IC2
NE646B
DOLBY NR IC

Q603
2SD965
PLUNGER DRIVE

Q604
2SD636
MONOSTABLE MULTIVIBRATOR

Q606
2SB641
CUE/REVIEW MUTE ON/OFF

Q605
2SC1327
MONOSTABLE MULTIVIBRATOR

Q12
2SC1684
LINE AMP

Q14
2SD965
LINE MUTE

Q16
2SD636
CUE/REVIEW MUTE

Q17
2SC1684 (2SD636)
RECORD MUTE ON/OFF

Q502
2SD636
HEADPHONES AMP

Q504
2SC1684 (2SD636)
HEADPHONES AMP

Q506
2SA564 (2SB641)
HEADPHONES AMP

Q607, 608
2SC1846
REGULATOR

Q10
2SD636H
RECORD AMP

Q8
2SD636
RECORD MUTE

25V470
(for United Kingdam.)
25V100
(for Asia, Latin America, Middle East, Africa areas, Australia and PX.)

25V470
(for United Kingdam.)
16V1000
(for Asia, Latin America, Middle East, Africa areas, Australia and PX.)

D608~611
SM1A02

AC POWER

MECHANISM EARTH

DC MOTOR

D401, 402, 404 IS2473
D403 VDI251

D601, 602, 603, 604 QVD152473
D605 SMIA02
D606 QVD152473
D612 QVD152473
D1 QVD152473
D3 152473

around 3V
around 2V
around 0.7V
around 0.2V

EQUALIZER CIR

IC1,2 NE

IC401 AN6552

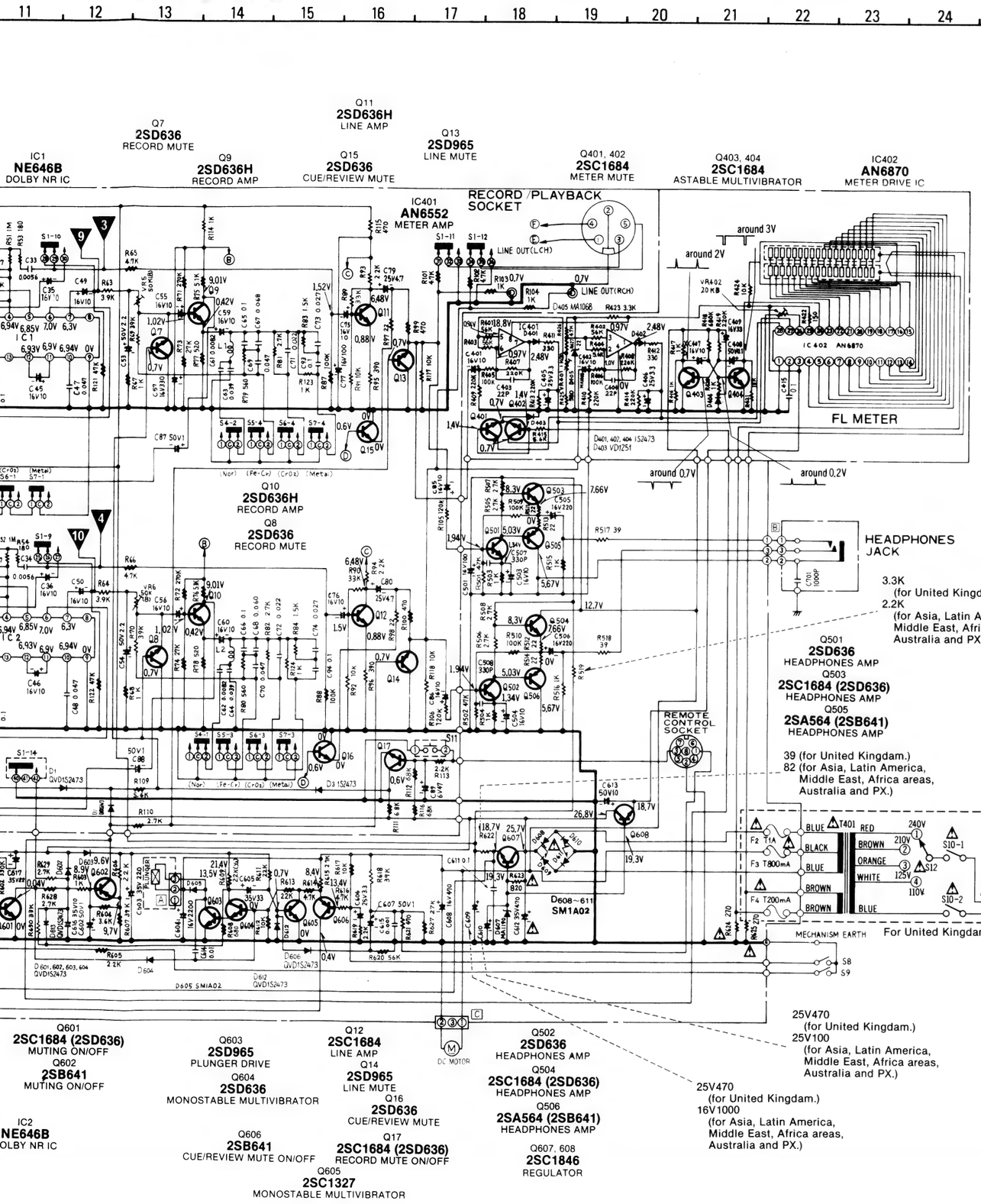
IC402 AN6870

※For Asia, Latin Am
Middle East, Africa

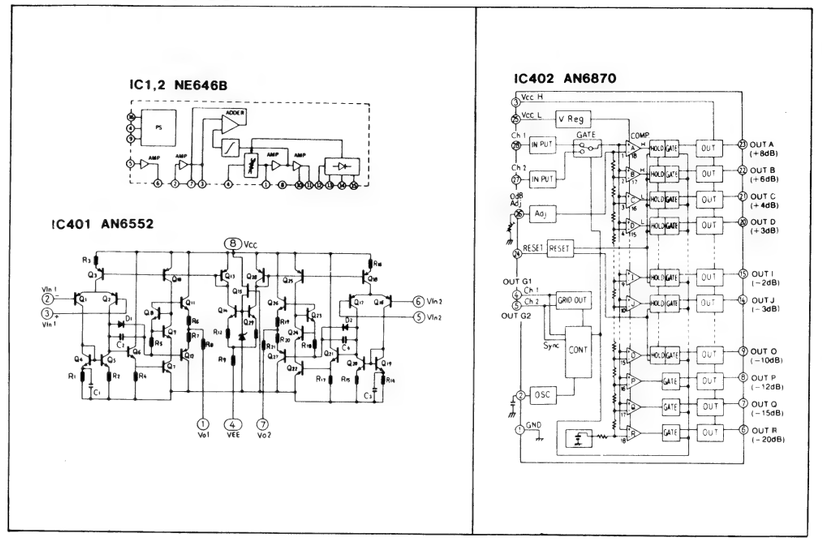
※For

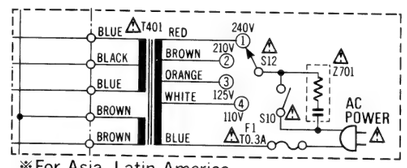
NOTE:

- S1-1 ~ S1-4 ····· Reco
- S2-1 ~ S2-4 ····· Input
- S3-1 ~ S3-4 ····· Dolby
- S4-1, S4-2 ····· Tape
- S5-1 ~ S5-4 ····· Tape
- S6-1 ~ S6-4 ····· Tape
- S7-1 ~ S7-4 ····· Tape
- S8 ····· Cue
- S9 ····· Playb
- S10-1, S10-2 ····· Powe
- S11 ····· Reco
- S12 ····· AC p
- VR1, 2 ····· Input
- VR3, 4 ····· Playb
- VR5, 6 ····· Reco
- VR301 ····· Erase
- VR302 ····· Bias

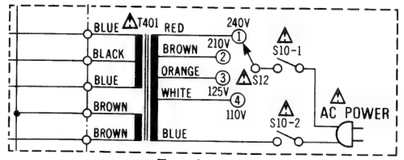


EQUIVALENT CIRCUIT





※For Asia, Latin America, Middle East, Africa areas and PX.



※For Australia.

SPECIFICATIONS * Input level control ··· MAX

Playback S/N ratio Test tape ··· QZZCFM	More than 45 dB (without NAB filter)
Overall distortion Test tape ··· QZZCRA for Normal ··· QZZCRX for CrO_2 ··· QZZCRY for Fe-Cr ··· QZZCRZ for Metal	Less than 4%
Overall S/N ratio Test tape ··· QZZCRA	More than 43 dB (without NAB filter)

NOTE: RESISTORS
ERD ··· Carbon
ERG ··· Metal-oxide
ERO ··· Metal-film
ERX ··· Metal-film
ERQ ··· Fuse type metallic
ERC ··· Solid
ERF ··· Cement

CAPACITORS
ECG□ ····· Ceramic
ECK□ ····· Ceramic
ECC□ ····· Ceramic
ECF□ ····· Ceramic
ECQM ····· Polyester film
ECQE ····· Polyester film
ECQF ····· Polypropylene
ECE□ ····· Electrolytic
ECE□N ··· Non polar electrolytic
ECQS ····· Polystyrene
ECS□ ····· Tantalum

Ref. No.	Part No.
RESISTORS	
R1, 2	ERD25FJ100
R3, 4	ERD25TJ473
R5, 6	ERD25FJ101
R7, 8	ERD25TJ154
R9, 10	ERD25FJ471
R11, 12	ERD25FJ101
R13, 14	ERD25TJ224
R17, 18	ERD25FJ822
R23, 24	ERD25FJ822
R25, 26	ERD25TJ334
R27, 28	ERD25FJ822
R29, 30	ERD25FJ222
R31, 32	ERD25FJ472
R33, 34	ERD25FJ562
R37, 38	ERD25TJ273
R43 B	ERQ14AJ270
※For United Kingdom.	
NAIEJA	ERD25FJ270
※For Asia, Latin America, Middle East, Africa areas, Australia and PX.	
R45, 46	ERD25TJ474
R47, 48	ERD25TJ473
R49, 50	ERD25FJ332
R51, 52	ERD25TJ105
R53, 54	ERD25FJ181
R55, 56, 57, 58	ERD25FJ102
R63, 64	ERD25FJ392
R69, 70	ERD25TJ393
R79, 80	ERD25FJ561
R81, 82	ERD25FJ272
R83, 84	ERD25FJ152
R89, 90	ERD25TJ333
R91, 92	ERD25FJ103
R93, 94	ERD25FJ222
R95, 96	ERD25FJ391
R97, 98	ERD25FJ220
R105, 106	ERD25TJ124
R108	ERG1ANJ221
R114	ERD25FJ102
R115	ERD25FJ471
R117, 118	ERD25FJ103
R511, 512, 513, 514	ERD25FJ220
R516	ERD25FJ102
R517, 518	ERD25FJ390
R519 B	ERD25FJ332
※For United Kingdom.	
NAIEJ	ERD25FJ222
※For Asia, Latin America, Middle East, Africa areas, Australia and PX.	
R601	ERD25TJ333
R602	ERD25TJ334
R603	ERD25FJ102
R606	ERD25FJ222
R609	ERD50FJ222
R611	ERD25TJ223
R615	ERD25FJ272
R616	ERD25FJ472
R618	ERD25TJ393
R619	ERD25FJ222
R619	ERD25FJ471
R621	ERD25FJ471
R622 B	ERQ12HJ390P
※For United Kingdom.	
NAIEJ	ERG12ANJ820
※For Asia, Latin America, Middle East, Africa areas, Australia and PX.	
R623 BA	ERD50FJ821
※For United Kingdom.	
NAIEJA	ERD25FJ821
※For Asia, Latin America, Middle East, Africa areas, Australia and PX.	
R624, 625	
BA	ERD50FJ271
※For United Kingdom.	
NAIEJA	ERD25FJ271
※For Asia, Latin America, Middle East, Africa areas, Australia and PX.	
R629	ERD25FJ272
R630	ERD25TJ333
R701, 702	ERD25FJ682
R123, 124	ERD25FJ102
R301	ERD25FJ1R0
R302	ERD25FJ562
R304, 305	
B	ERQ14AJ150
※For United Kingdom.	
NAIEJ	ERD25FJ150
※For Asia, Latin America, Middle East, Africa areas, Australia and PX.	
R306	ERD25FJ122
R307, 308	ERD25FJ220
R309	ERD25TJ223
R310	ERD25TJ183
R311	ERD25TJ683
R312	ERD25TJ123
R313 B	ERQ12HJ150
※For United Kingdom.	
R401, 402, 403, 404	ERD25TJ563
R405, 406	ERD25TJ104
R407, 408, 409, 410	ERD25TJ224
R411, 412	ERD25FJ331
R413, 414	ERD25TJ224
R415	ERD25FJ562
R416, 417	ERD25FJ102
R418	ERD25TJ684
R419	ERD25TJ224
R420	ERD25FJ102
R421	ERD25TJ153
R422 B	ERQ14AJ151
※For United Kingdom.	
NAIEJ	ERD25FJ151
※For Asia, Latin America, Middle East, Africa areas, Australia and PX.	
R423	ERD25FJ332
R424	ERD25FJ103
R425	ERD25FJ561
R426	ERD25FJ472
R427	ERD25FJ220

NOTE:

- S1-1 ~ S1-4 ····· Record/playback select switch (shown in playback position).
- S2-1 ~ S2-4 ····· Input select switch (shown in LINE position).
- S3-1 ~ S3-4 ····· Dolby NR IN/OUT select switch (shown in OUT position).
- S4-1, S4-2 ····· Tape select switch (for Normal tape, shown in ON position).
- S5-1 ~ S5-4 ····· Tape select switch (for Fe-Cr tape, shown in OFF position).
- S6-1 ~ S6-4 ····· Tape select switch (for CrO_2 tape, shown in OFF position).
- S7-1 ~ S7-4 ····· Tape select switch (for Metal tape, shown in OFF position).
- S8 ····· Cue and review muting switch (Close at cue/review mode).
- S9 ····· Playback muting switch (Close at playback or record mode).
- S10-1, S10-2 ····· Power ON/OFF switch.
- S11 ····· Record muting switch (shown in OFF position).
- S12 ····· AC power voltage select switch.
- VR1, 2 ····· Input level control.
- VR3, 4 ····· Playback gain adjustment VR.
- VR5, 6 ····· Record gain adjustment VR.
- VR301 ····· Erase current adjustment VR (for Metal tape position).
- VR302 ····· Bias current adjustment VR (for Normal tape position, L-CH).
- VR303 ····· Bias current adjustment VR (for Metal tape position, L-CH).
- VR304 ····· Bias current adjustment VR (for Metal tape position, R-CH).
- VR401 ····· FL meter adjustment VR (for −20 dB indication).
- VR402 ····· FL meter adjustment VR (for 0 dB indication).
- L3, 4 ····· Bias leakage adjustment coil.
- Resistance are in ohms (Ω), 1/4 watt unless specified otherwise. K=1,000Ω. Resistors indicated thickly show printed type resistor.
- Capacity are in microfarads (μF) unless specified otherwise. P=Pico-farads.
- The mark (▼) shows test point. e.g. ∇=Test point 1.
- All voltage values shown in circuitry are under no signal condition and record mode with volume control at minimum position. For measurement, use VTVM.
- ⚠ indicates that only parts specified by the manufacturer used for safety.
- Parts No. in ( ) show for Asia, Latin America, Middle East, Africa areas, Australia and PX.

38 37 36 35 34 33 32 31 30 29 28 27 26 25 24 23 22 21 20 19 18 17 16 15 14 13 12

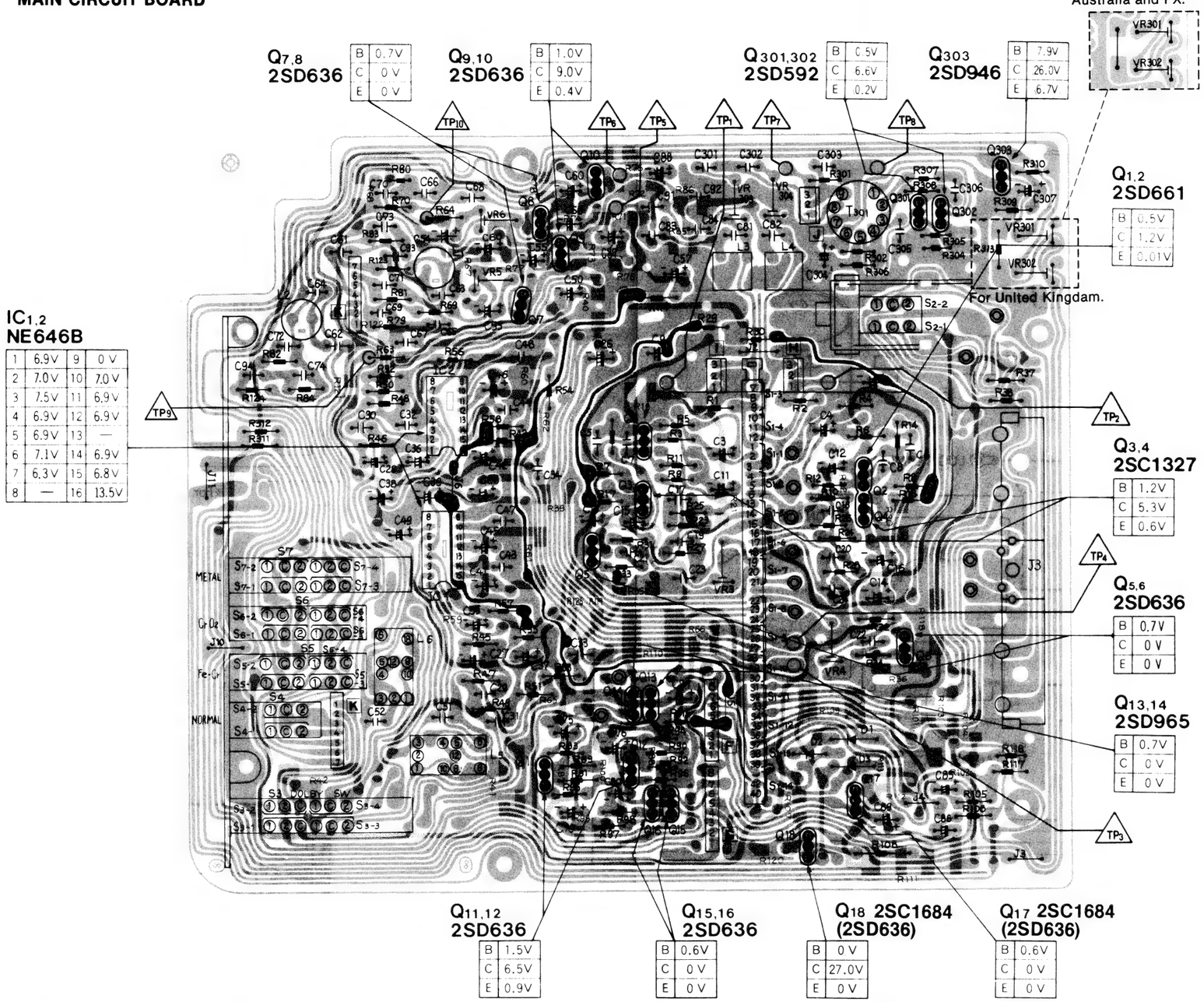
CIRCUIT BOARD

NOTE: ⚠ indicates that only parts specified by the manufacturer be used for safety.

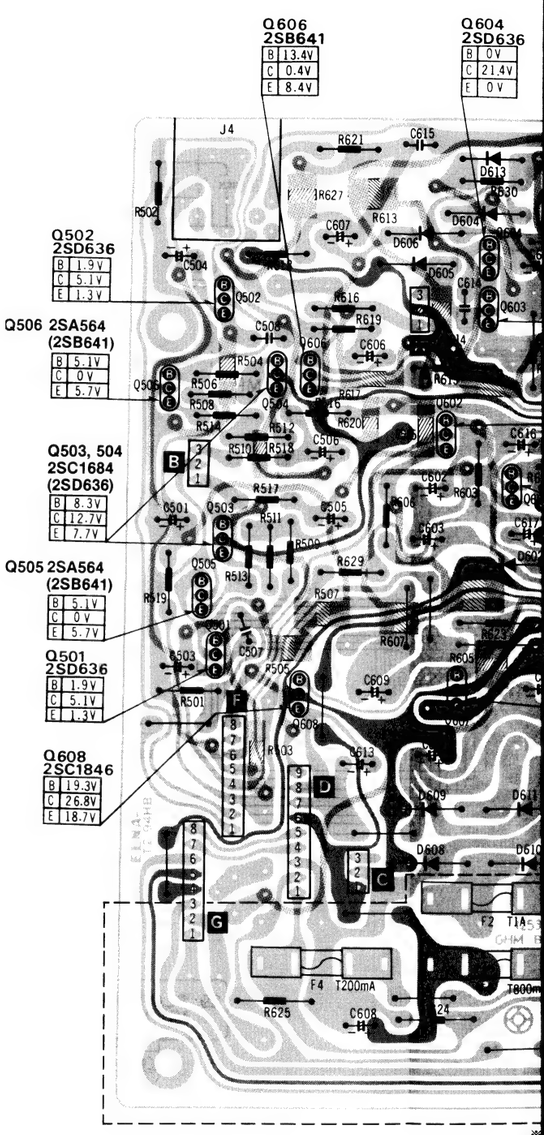
Ref. No.	Part No.
R501, 502	ERD25TJ473
R506, 508	ERD25FJ272
R509	ERD25TJ104
VARIABLE RESISTORS	
VR1, 2	EWKN3AF21A24
VR3, 4	EVNK4AA00B24
VR5, 6	EVNK4AA00B54
VR301, 302	EVNK4AA00B54
VR303, 304	EVNK4AA00B15
VR401	EVNK4AA00B13
VR402	EVNK4AA00B24
CAPACITORS	
C3, 4	ECEA16M10
C5, 6	ECKD1H471KB
C7, 8	ECKD1H102MD
C9, 10 B	ECEA1ES101
※For United Kingdom.	
NAEFJ	ECEA1ES470
※For Asia, Latin America, Middle East, Africa areas, Australia and PX.	
C11, 12, 13, 14	ECEA1AS470
C15, 16	ECEA1JS4R7
C17, 18	ECQM1H153JZ
C19, 20	ECCD1H121KD
C21, 22	ECFDD123KVY
C23, 24	ECKD1H103ZF
C25, 26	ECEA50MR33
C27, 28	ECEA1HS100
C29, 30	ECQM1H472JZ
C31	ECQM1H273JZ
C32	ECQM1H273JZ
C33, 34	ECQM1H562JZ
C35, 36	ECEA1HS100
C37, 38	ECEA1AS470
C39	ECEA1ES470
C41, 42	ECEA50ZR33
C43, 44	ECFDD104MXY
C45, 46	ECEA1HS100
C47, 48	ECFDD473KXY
C49, 50	ECEA1HS100
C53, 54	ECEA2AS2R2
C55, 56	ECEA1HS100
C57	ECEA1CS331
C59, 60	ECEA1HS100
C61, 62	ECFDD822KVY
C63, 64	ECQM1H393JZ
C65, 66	ECFDD104KXY
C67, 68	ECFDD683KXY
C69, 70	EVFDD473KXY
C71, 72	ECFDD223KXY
C73, 74	ECFDD273KXY
C75, 76	ECEA1HS100
C77	ECEA1ES101
C79, 80	ECEA1JS4R7
C81, 82	ECQP1122JZ
C83, 84	ECFDD562KVY
C85, 86	ECEA1HS100
C87, 88	ECEA2AS010
C89	ECEA1AS470
C91, 92	ECKD1H102MD
C93, 94	ECFDD104KXY
C301, 302	ECCD1H121KD
C303	ECQP1183JZ
C304	ECEA2AS010
C305, 306	ECFDD223MXY
C307	ECEA1HS100
C401, 402	ECEA1HS100
C403, 404	ECCD1H220KD
C405, 406	ECEA2AS3R3
C407	ECEA1HS100
C408	ECEA50ZR1
C409	ECEA1CS330
C415	ECFDD473MXY
C501	ECEA1ES101
C503, 504	ECEA1HS100
C505, 506	ECEA1CS221
C507	ECCD1H331KD
C508	ECCD1H331KD
C601	ECEA1HS470
C602	ECEA2AS010
C603	ECEA1VS221
C604	ECEA1CS222
C605	ECEA1VS330
C606	ECEA2AS3R3
C607	ECEA2AS010
C608	ECEA1CS471
C609 B	ECEA1ES471
※For United Kingdom.	

Ref. No.	Part No.
NAEFJ	ECEA1CS102
※For Asia, Latin America, Middle East, Africa areas, Australia and PX.	
C610 B	ECEA1ES471
※For United Kingdom.	
NAEFJ	ECEA1ES101
※For Asia, Latin America, Middle East, Africa areas, Australia and PX.	
C611	ECFDD104MXY
C612 ⚠	ECEA1VS471
C613	ECEA1HS100
C614	ECKD1H103ZF
C615	ECKD1H102MD
C616	ECEA1HS100
C617	ECEA1VS220
C701	ECKD1H102MD
C702	ECKD1H102MD
COMBINATION PART	
Z701	
NEFJ ⚠	QCR0008T
※For Asia, Latin America, Middle East, Africa areas and PX.	
TRANSISTORS	
Q1, 2	2SD661T
Q3	2SC1327
Q4	2SD661T
Q5, 6, 7, 8	2SD636R
Q9, 10, 11	2SD636HR
Q12	2SC1684
Q13, 14	2SD965
Q15, 16	2SD636R
Q17, 18 B	2SC1684
※For United Kingdom.	
NAEFJ	2SD636R
※For Asia, Latin America, Middle East, Africa areas, Australia and PX.	
Q301, 302	2SD592NCS
Q303	2SD946
Q401, 402, 403, 404	2SC1684
Q501, 502	2SD636R
Q503, 504 B	2SC1684
※For United Kingdom.	
NAEFJ	2SD636R
※For Asia, Latin America, Middle East, Africa areas, Australia and PX.	
Q505, 506 B	2SA564
※For United Kingdom.	
NAEFJ	2SB641R
※For Asia, Latin America, Middle East, Africa areas, Australia and PX.	
Q601 B	2SC1684
※For United Kingdom.	
NAEFJ	2SD636R
※For Asia, Latin America, Middle East, Africa areas, Australia and PX.	
Q602	2SB641R
Q603	2SD965
Q604	2SD636R
Q605	2SD661T
Q606	2SB641R
Q607, 608	2SC1684
DIODES & RECTIFIERS	
D1, 2, 3	MA161
D401, 402	MA161
D403	RVDKB265E
D404	MA161
D405	RVDRD6R8EB
D601, 602, 603, 604	MA161
D605	SM112
D606	MA161
D607	MA1190LF
D608, 609, 610, 611 ⚠	SM112
D612, 613	MA161
INTEGRATED CIRCUITS	
IC1, 2	NE646B
IC401	AN6552
IC402	AN6870

MAIN CIRCUIT BOARD



POWER SUPPLY CIRCUIT BOARD



Ref. No.	Part No.	Part Name & Description
TRANSFORMERS		
T301	QLB0193K	Oscillation Transformer
T401 B ⚠	QLPD43ELX	Power Transformer
※For United Kingdom.		
NAEFJ ⚠	QLPA54ELX	〃
※For Asia, Latin America, Middle East, Africa areas, Australia and PX.		
COILS		
L1, 2	QLQX0332K	Peaking Coil
L3, 4	QLQC0331	Bias Trap Coil
L5, 6	QLM9Z7	MPX Filter
SWITCHES		
S1	QSSE203T	Slide Switch (Record/Playback Selector)
S2	QSW2233A	Push Switch (LINE IN/MIC Selector)
S3, 4, 5, 6, 7	QSWX503A	Push Switch (Dolby ON/OFF and Tape Selector)
S8	QSB0251I	Leaf Switch (Playback Muting Switch)
S9	QSB0251I	Leaf Switch (Cue/Review Muting Switch)
S10 BA ⚠	QSW2214A	Push Switch (Power ON/OFF)
※For United Kingdom and Australia.		
NAEFJ ⚠	QSW1115AZ	〃
※For Asia, Latin America, Middle East, Africa areas and PX.		
S11	QSW2103A	Push Switch (Rec Mute ON/OFF)
S12 ⚠	QSR1407H	Rotary Switch (AC Voltage Selector)
FUSES		
F1 NEFJ ⚠	XBA2E03NS5	Fuse (0.3A)
※For Asia, Latin America, Middle East, Africa areas and PX.		
F2 B ⚠	XBAQ0004	Fuse (T 1A)
※For United Kingdom.		
F3 B ⚠	XBAQ0009	Fuse (T 800mA)
※For United Kingdom.		
F4 B ⚠	XBAQ0013	Fuse (T 200mA)
※For United Kingdom.		
JACKS		
J1	QJA0257H	Microphone Jack
J2	QJA0249C	Headphones Jack
J3	QEJ5002S	Jack Board
J4	QJS1956H	Remote Control Socket

38 37 36 35 34 33 32 31 30 29 28 27 26 25 24 23 22 21 20 19 18 17 16 15 14 13 12

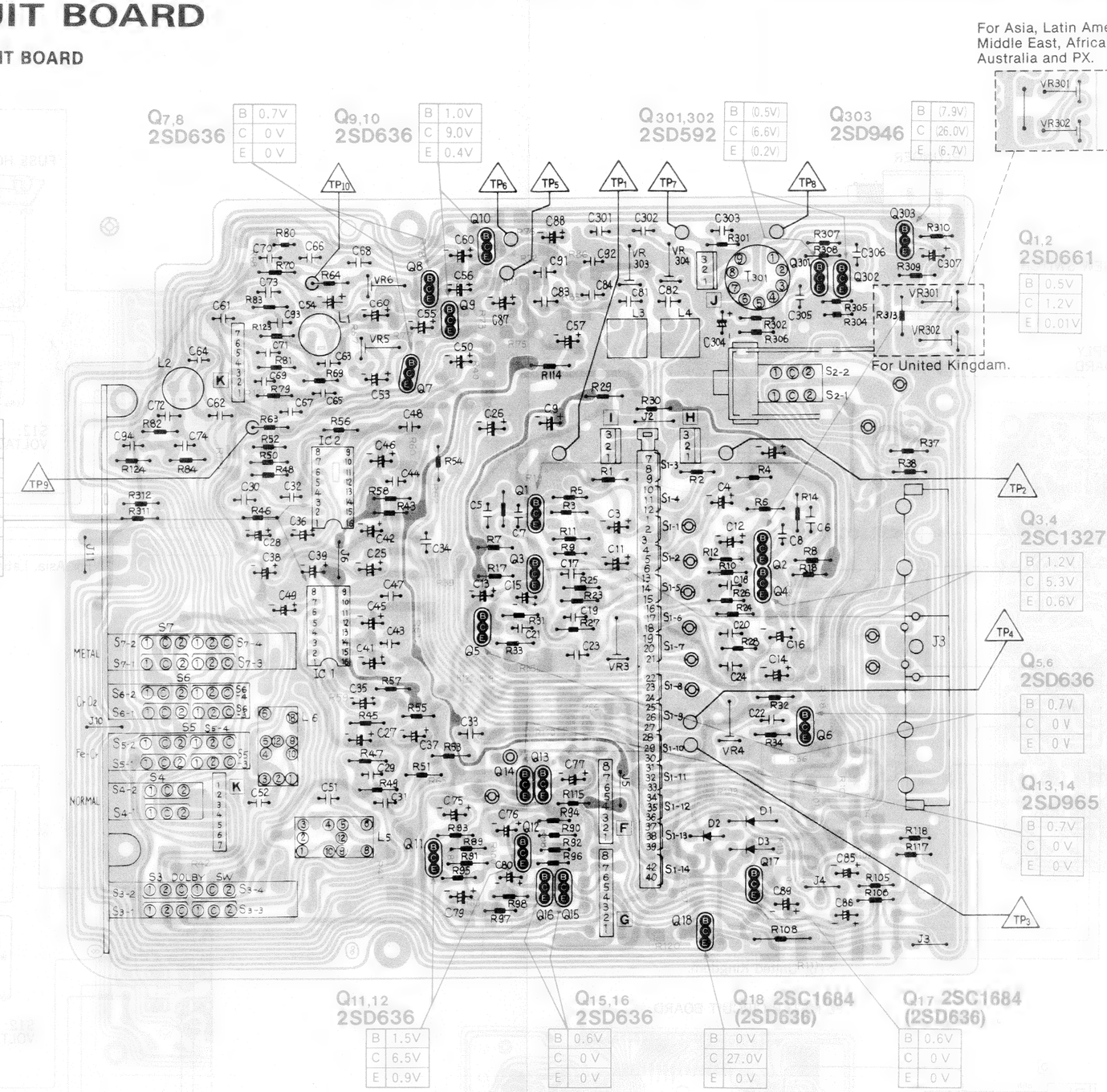
CIRCUIT BOARD

MAIN CIRCUIT BOARD

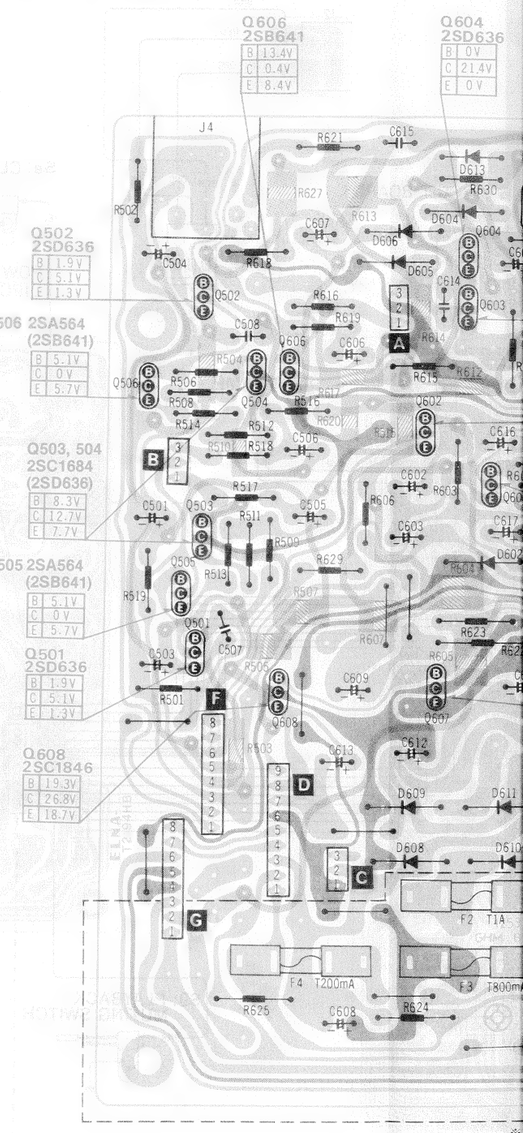
NOTE: ⚠ indicates that only parts specified by the manufacturer be used for safety.

Ref. No.	Part No.
R501, 502	ERD25TJ473
R506, 508	ERD25FJ272
R509	ERD25TJ104
VARIABLE RESISTORS	
VR1, 2	EWKN3AF21A24
VR3, 4	EVNK4AA00B24
VR5, 6	EVNK4AA00B54
VR301, 302	EVNK4AA00B54
VR303, 304	EVNK4AA00B15
VR401	EVNK4AA00B13
VR402	EVNK4AA00B24
CAPACITORS	
C3, 4	ECEA16M10
C5, 6	ECKD1H471KB
C7, 8	ECKD1H102MD
C9, 10 B	ECEA1ES101
※For United Kingdom.	
NAEJ	ECEA1ES470
※For Asia, Latin America, Middle East, Africa areas, Australia and PX.	
C11, 12, 13, 14	
	ECEA1AS470
C15, 16	ECEA1JS4R7
C17, 18	ECQM1H153JZ
C19, 20	ECCD1H121KD
C21, 22	ECFDD123KVY
C23, 24	ECKD1H103ZF
C25, 26	ECEA50MR33
C27, 28	ECEA1HS100
C29, 30	ECQM1H472JZ
C31	ECQM1H273JZ
C32	ECQM1H273JZ
C33, 34	ECQM1H562JZ
C35, 36	ECEA1HS100
C37, 38	ECEA1AS470
C39	ECEA1ES470
C41, 42	ECEA50ZR33
C43, 44	ECFDD104MXY
C45, 46	ECEA1HS100
C47, 48	ECFDD473KXY
C49, 50	ECEA1HS100
C53, 54	ECEA2AS2R2
C55, 56	ECEA1HS100
C57	ECEA1CS331
C59, 60	ECEA1HS100
C61, 62	ECFDD822KVY
C63, 64	ECQM1H393JZ
C65, 66	ECFDD104KXY
C67, 68	ECFDD683KXY
C69, 70	EVFDD473KXY
C71, 72	ECFDD223KXY
C73, 74	ECFDD273KXY
C75, 76	ECEA1HS100
C77	ECEA1ES101
C79, 80	ECEA1JS4R7
C81, 82	ECQP1122JZ
C83, 84	ECFDD562KVY
C85, 86	ECEA1HS100
C87, 88	ECEA2AS010
C89	ECEA1AS470
C91, 92	ECKD1H102MD
C93, 94	ECFDD104KXY
C301, 302	ECCD1H121KD
C303	ECQP1183JZ
C304	ECEA2AS010
C305, 306	ECFDD223MXY
C307	ECEA1HS100
C401, 402	ECEA1HS100
C403, 404	ECCD1H220KD
C405, 406	ECEA2AS3R3
C407	ECEA1HS100
C408	ECEA50ZR1
C409	ECEA1CS330
C415	ECFDD473MXY
C501	ECEA1ES101
C503, 504	ECEA1HS100
C505, 506	ECEA1CS221
C507	ECCD1H331KD
C508	ECCD1H331KD
C601	ECEA1HS470
C602	ECEA2AS010
C603	ECEA1VS221
C604	ECEA1CS222
C605	ECEA1VS330
C606	ECEA2AS3R3
C607	ECEA2AS010
C608	ECEA1CS471
C609 B	ECEA1ES471
※For United Kingdom.	

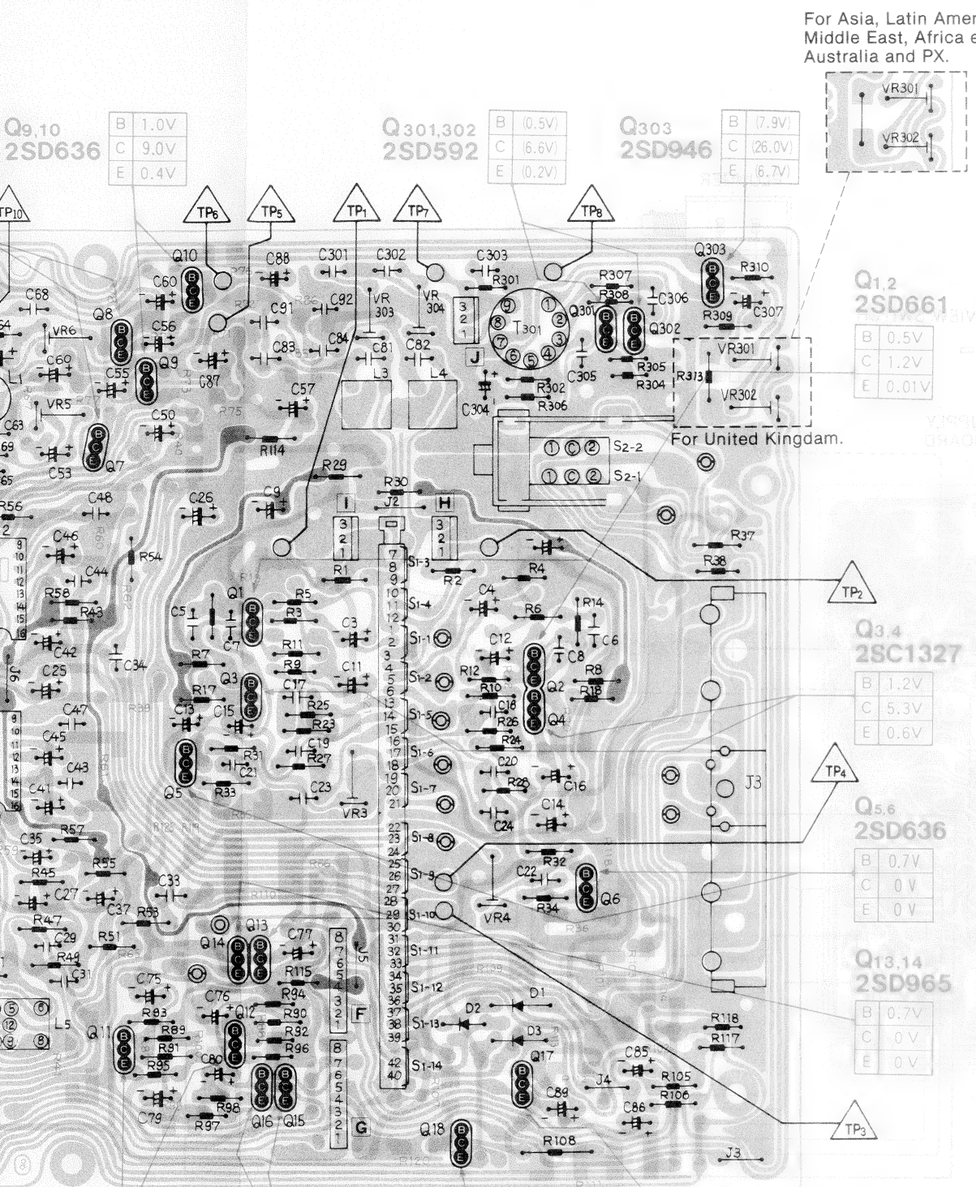
Ref. No.	Part No.
NAEJ	ECEA1CS102
※For Asia, Latin America, Middle East, Africa areas, Australia and PX.	
C610 B	ECEA1ES471
※For United Kingdom.	
NAEJ	ECEA1ES101
※For Asia, Latin America, Middle East, Africa areas, Australia and PX.	
C611	ECFDD104MXY
C612 ⚠	ECEA1VS471
C613	ECEA1HS100
C614	ECKD1H103ZF
C615	ECKD1H102MD
C616	ECEA1HS100
C617	ECEA1VS220
C701	ECKD1H102MD
C702	ECKD1H102MD
COMBINATION PART	
Z701	
NEJ ⚠	QCR0008T
※For Asia, Latin America, Middle East, Africa areas and PX.	
TRANSISTORS	
Q1, 2	2SD661T
Q3	2SC1327
Q4	2SD661T
Q5, 6, 7, 8	2SD636R
Q9, 10, 11	2SD636HR
Q12	2SC1684
Q13, 14	2SD965
Q15, 16	2SD636R
Q17, 18 B	2SC1684
※For United Kingdom.	
NAEJ	2SD636R
※For Asia, Latin America, Middle East, Africa areas; Australia and PX.	
Q301, 302	2SD592NCS
Q303	2SD946
Q401, 402, 403, 404	
	2SC1684
Q501, 502	2SD636R
Q503, 504	
B	2SC1684
※For United Kingdom.	
NAEJ	2SD636R
※For Asia, Latin America, Middle East, Africa areas, Australia and PX.	
Q505, 506	
B	2SA564
※For United Kingdom.	
NAEJ	2SB641R
※For Asia, Latin America, Middle East, Africa areas, Australia and PX.	
Q601 B	2SC1684
※For United Kingdom.	
NAEJ	2SD636R
※For Asia, Latin America, Middle East, Africa areas, Australia and PX.	
Q602	2SB641R
Q603	2SD965
Q604	2SD636R
Q605	2SD661T
Q606	2SB641R
Q607, 608	2SC1684
DIODES & RECTIFIERS	
D1, 2, 3	MA161
D401, 402	MA161
D403	RVDKB265E
D404	MA161
D405	RVDRD6R8EB
D601, 602, 603, 604	
	MA161
D605	SM112
D606	MA161
D607	MA1190LF
D608, 609, 610, 611	
⚠	SM112
D612, 613	MA161
INTEGRATED CIRCUITS	
IC1, 2	NE646B
IC401	AN6552
IC402	AN6870



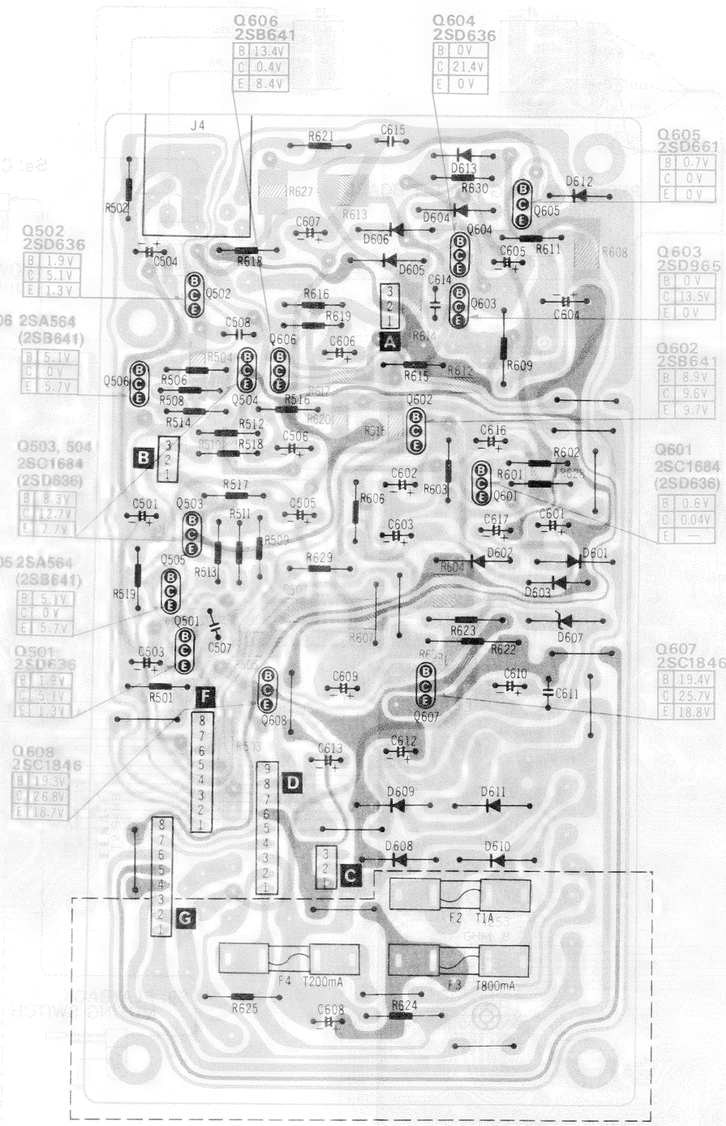
POWER SUPPLY CIRCUIT BOARD



Ref. No.	Part No.	Part Name & Description
TRANSFORMERS		
T301	QLB0193K	Oscillation Transformer
T401 B ⚠	QLPD43ELX	Power Transformer
※For United Kingdom.		
NAEJ ⚠	QLPA54ELX	〃
※For Asia, Latin America, Middle East, Africa areas, Australia and PX.		
COILS		
L1, 2	QLQX0332K	Peaking Coil
L3, 4	QLQC0331	Bias Trap Coil
L5, 6	QLM9Z7	MPX Filter
SWITCHES		
S1	QSSE203T	Slide Switch (Record/Playback Selector)
S2	QSW2233A	Push Switch (LINE IN/MIC Selector)
S3, 4, 5, 6, 7	QSWX503A	Push Switch (Dolby ON/OFF and Tape Selector)
S8	QSB0251I	Leaf Switch (Playback Muting Switch)
S9	QSB0251I	Leaf Switch (Cue/Review Muting Switch)
S10 BA ⚠	QSW2214A	Push Switch (Power ON/OFF)
※For United Kingdom and Australia.		
NEM ⚠	QSW1115AZ	〃
※For Asia, Latin America, Middle East, Africa areas and PX.		
S11	QSW2103A	Push Switch (Rec Mute ON/OFF)
S12 ⚠	QSR1407H	Rotary Switch (AC Voltage Selector)
FUSES		
F1 NEM ⚠	XBA2E03NS5	Fuse (0.3A)
※For Asia, Latin America, Middle East, Africa areas and PX.		
F2 B ⚠	XBAQ0004	Fuse (T 1A)
※For United Kingdom.		
F3 B ⚠	XBAQ0009	Fuse (T 800mA)
※For United Kingdom.		
F4 B ⚠	XBAQ0013	Fuse (T 200mA)
※For United Kingdom.		
JACKS		
J1	QJA0257H	Microphone Jack
J2	QJA0249C	Headphones Jack
J3	QEJ5002S	Jack Board
J4	QJS1956H	Remote Control Socket

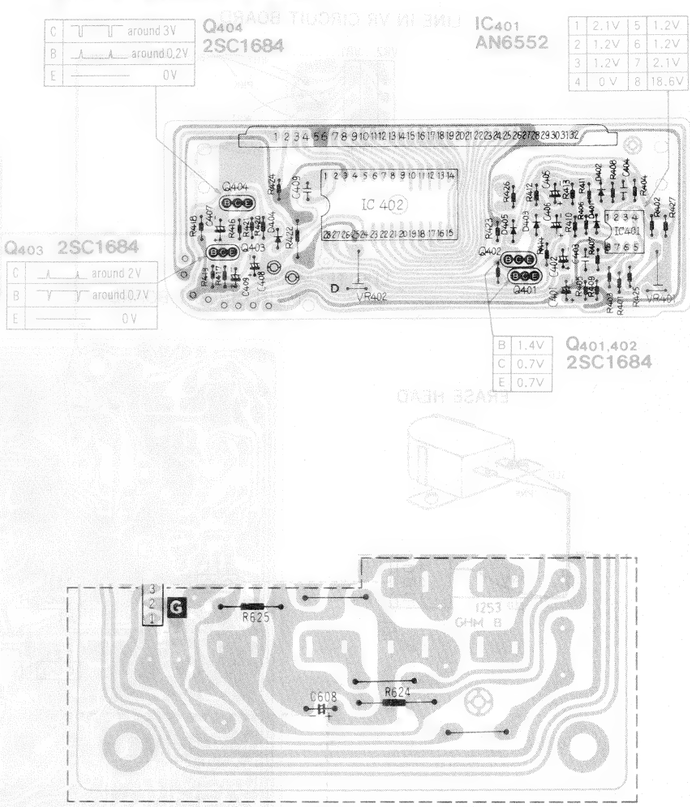


POWER SUPPLY CIRCUIT BOARD



※ For United Kingdam.

FL METER CIRCUIT BOARD



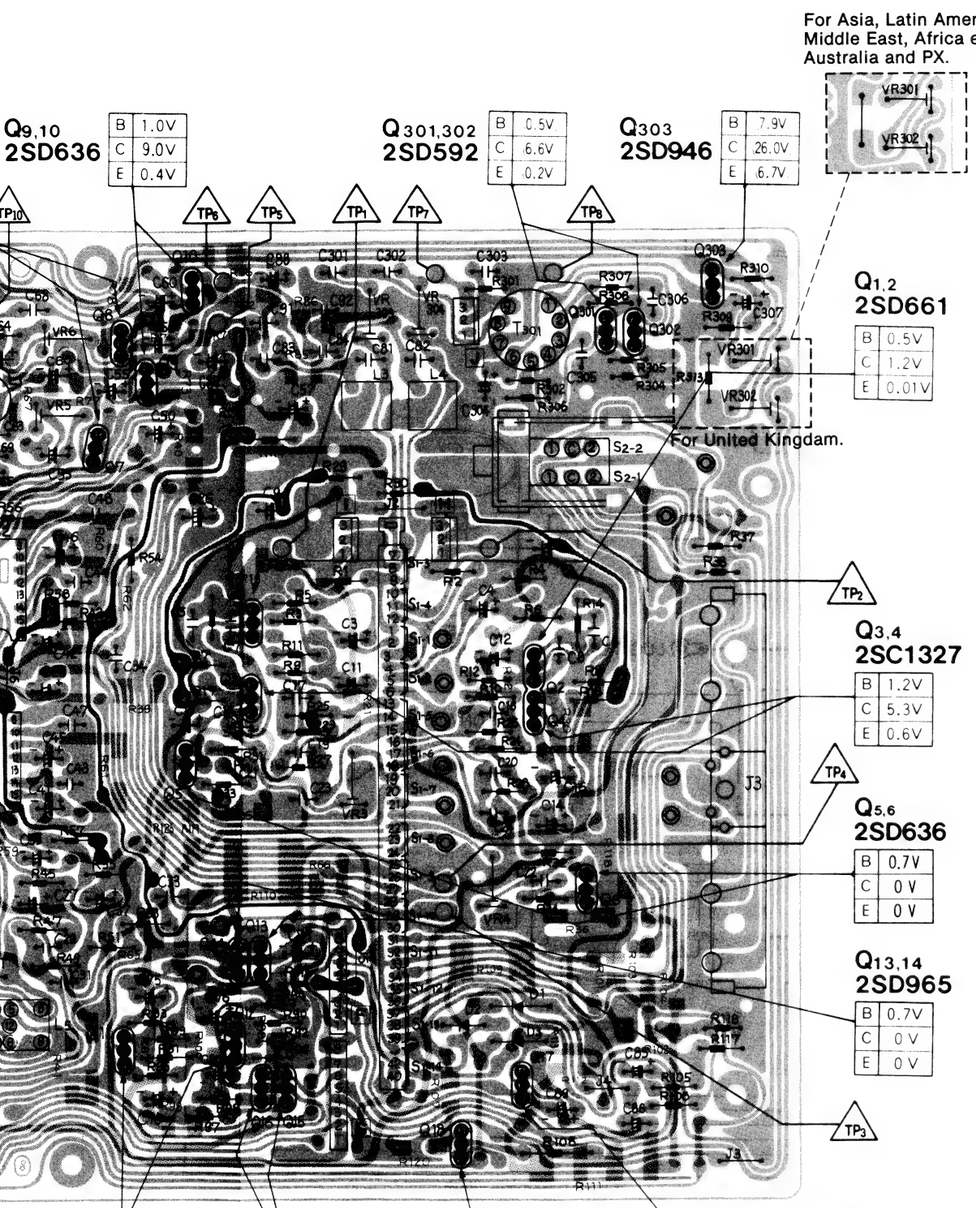
※ For Asia, Latin America, Middle East, Africa areas and PX.

escription	Ref. No.	Part No.	Part Name & Description
	S10 BA △	QSW2214A	Push Switch (Power ON/OFF)
	※For United Kingdom and Australia.		
	NEU △	QSW1115AZ	"
	※For Asia, Latin America, Middle East, Africa areas and PX.		
lector)	S11	QSW2103A	Push Switch (Rec Mute ON/OFF)
/MIC Selector)	S12 △	QSR1407H	Rotary Switch (AC Voltage Selector)
ape Selector)		**FUSES**	
itch)	F1 NEU △	XBA2E03NS5	Fuse (0.3A)
	※For Asia, Latin America, Middle East, Africa areas and PX.		
Switch)	F2 B △	XBAQ0004	Fuse (T 1A)
	※For United Kingdom.		

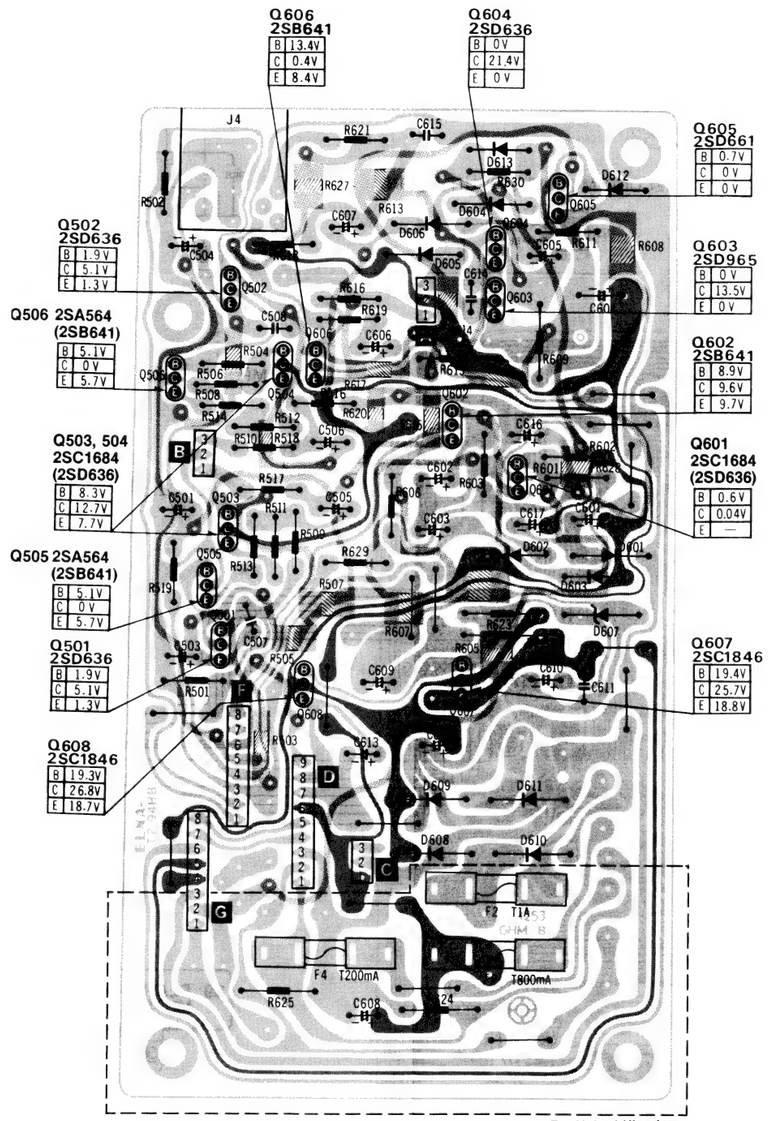
Ref. No.	Part No.	Part Name & Description
F3 B △	XBAQ0009	Fuse (T 800mA)
※For United Kingdom.		
F4 B △	XBAQ0013	Fuse (T 200mA)
※For United Kingdom.		
	JACKS	
J1	QJA0257H	Microphone Jack
J2	QJA0249C	Headphones Jack
J3	QEJ5002S	Jack Board
J4	QJS1956H	Remote Control Socket

NOTE:

- The circuit shown in ▒▒ on the conductor is +B (bias) circuit.
- The circuit shown in ▒▒ on the conductor indicates printed circuit, which is included printed type resistors.
- The circuit shown in ▒▒ on the conductor indicates printed circuit on the back side of the printed circuit board.
- Values indicated in [ ] are DC voltage between the ground and electrical parts.
- Parts No. in ( ) show for Asia, Latin America, Middle East, Africa areas, Australia and PX.

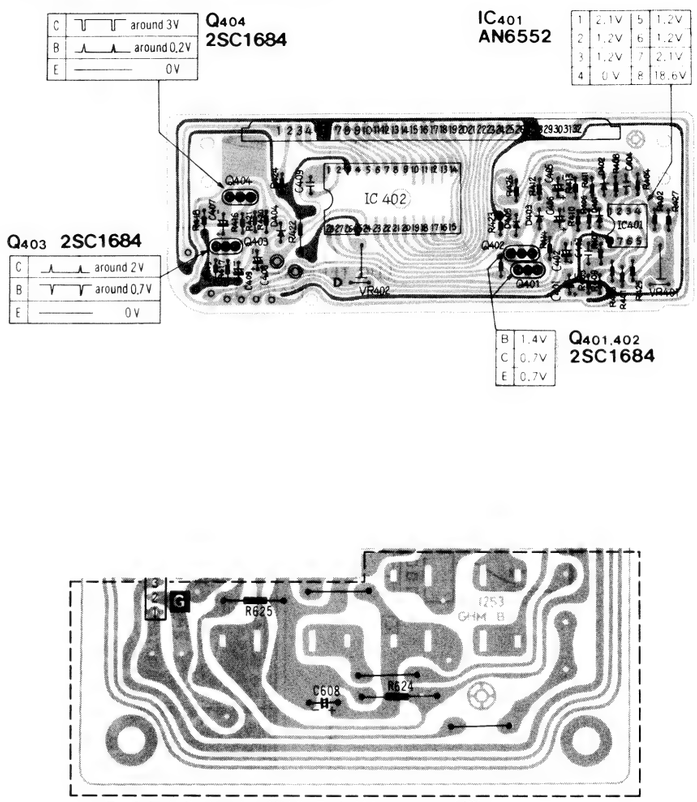


POWER SUPPLY CIRCUIT BOARD



※ For United Kingdam.

FL METER CIRCUIT BOARD



※ For Asia, Latin America, Middle East, Africa areas and PX.

escription	Ref. No.	Part No.	Part Name & Description
	S10 BEA △	QSW2214A	Push Switch (Power ON/OFF)
	※For United Kingdom and Australia.		
	MEU △	QSW1115AZ	〃
	※For Asia, Latin America, Middle East, Africa areas and PX.		
lector)	S11	QSW2103A	Push Switch (Rec Mute ON/OFF)
/MIC Selector)	S12 △	QSR1407H	Rotary Switch (AC Voltage Selector)
	FUSES		
ape Selector)			
itch)	F1 MEU △	XBA2E03NS5	Fuse (0.3A)
	※For Asia, Latin America, Middle East, Africa areas and PX.		
Switch)	F2 B △	XBAQ0004	Fuse (T 1A)
	※For United Kingdom.		

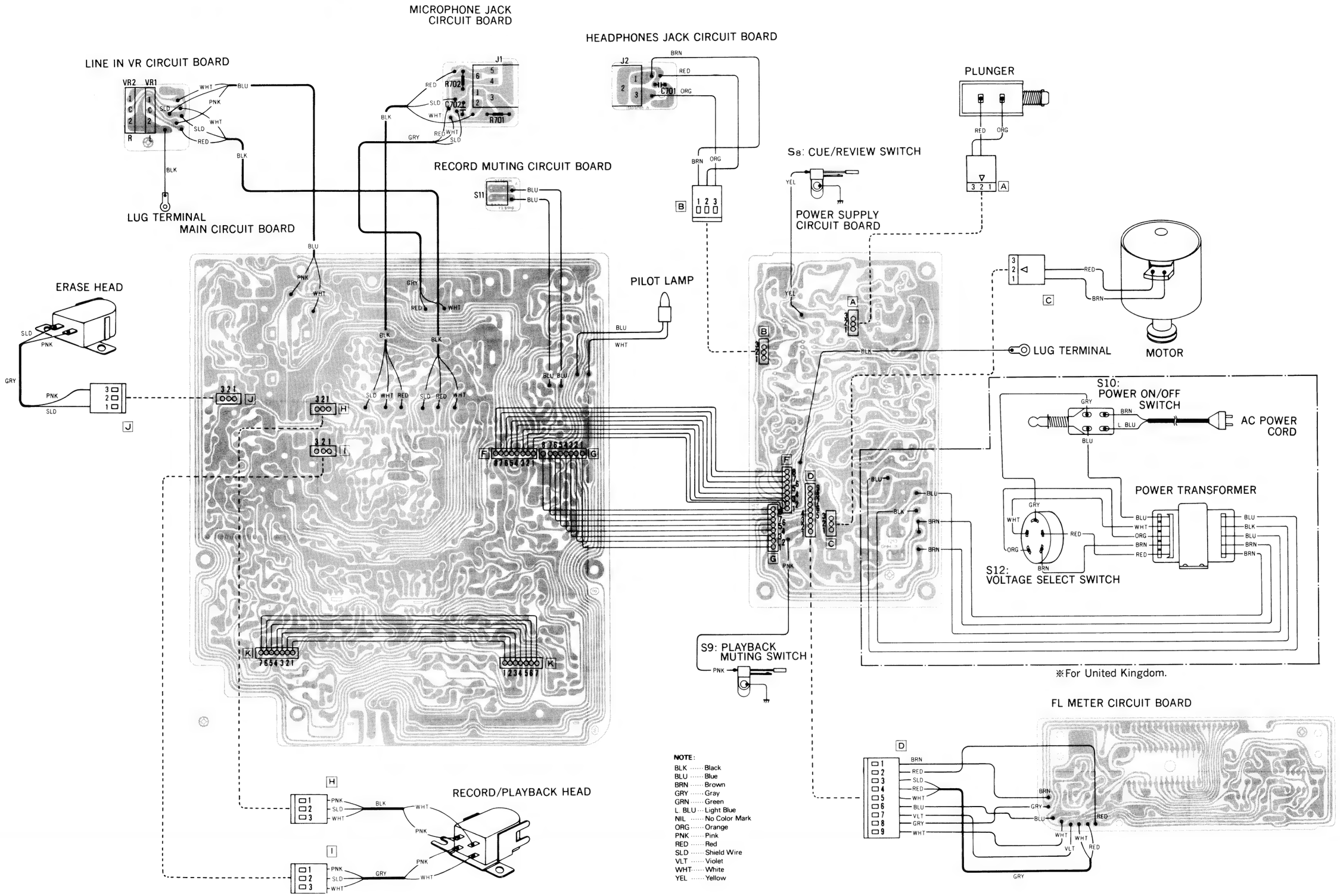
Ref. No.	Part No.	Part Name & Description
F3 B △	XBAQ0009	Fuse (T 800mA)
※For United Kingdom.		
F4 B △	XBAQ0013	Fuse (T 200mA)
※For United Kingdom.		
	JACKS	
J1	QJA0257H	Microphone Jack
J2	QJA0249C	Headphones Jack
J3	QEJ5002S	Jack Board
J4	QJS1956H	Remote Control Socket

NOTE:

- The circuit shown in ▬ on the conductor is +B (bias) circuit.
- The circuit shown in ▬ on the conductor indicates printed circuit, which is included printed type resistors.
- The circuit shown in ▬ on the conductor indicates printed circuit on the back side of the printed circuit board.
- Values indicated in [ ] are DC voltage between the ground and electrical parts.
- Parts No. in ( ) show for Asia, Latin America, Middle East, Africa areas, Australia and PX.

RS-M24

WIRING CONNECTION DIAGRAM



NOTE:

BLK ..... Black
BLU ..... Blue
BRN ..... Brown
GRY ..... Gray
GRN ..... Green
L. BLU ... Light Blue
NIL ..... No Color Mark
ORG ..... Orange
PNK ..... Pink
RED ..... Red
SLD ..... Shield Wire
VLT ..... Violet
WHT ..... White
YEL ..... Yellow

11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38

CK
RD

HEADPHONES JACK CIRCUIT BOARD

J2 BRN RED ORG C701

TING CIRCUIT BOARD

BLU BLU

B 1 2 3

BRN ORG

PLUNGER

RED ORG

3 2 1 A

S8: CUE/REVIEW SWITCH

YEL

POWER SUPPLY CIRCUIT BOARD

PILOT LAMP

BLU WHT

A B C D F G

YEL BLK

3 2 1 RED BRN C

LUG TERMINAL

MOTOR

S10: POWER ON/OFF SWITCH

GRY BRN L BLU BLU AC POWER CORD

POWER TRANSFORMER

GRY WHT ORG RED BRN

BLU WHT ORG BRN RED

BLU BLK BLU BRN BRN

S12: VOLTAGE SELECT SWITCH

BLU BLU BRN BRN BLK

PNK

S9: PLAYBACK MUTING SWITCH

PNK

※For United Kingdom.

PLAYBACK HEAD

FL METER CIRCUIT BOARD

D

1 BRN
2 RED
3 SLD
4 RED
5 WHT
6 BLU
7 VLT
8 GRY
9 WHT

BRN GRY BLU RED WHT VLT WHT RED GRY

NOTE:

BLK ..... Black
BLU ..... Blue
BRN ..... Brown
GRY ..... Gray
GRN ..... Green
L BLU ... Light Blue
NIL ..... No Color Mark
ORG ..... Orange
PNK ..... Pink
RED ..... Red
SLD ..... Shield Wire
VLT ..... Violet
WHT ..... White
YEL ..... Yellow

SPARK KILLER

FUSE HOLDER

S10: POWER ON/OFF SWITCH

AC POWER CORD

GRY YEL

POWER TRANSFORMER

BLU BRN BLU BLK

GRY WHT ORG RED BRN

BLU WHT ORG BRN RED

BLU BLK BLU BRN BRN

S12: VOLTAGE SELECT SWITCH

※For Asia, Latin America, Middle East, Africa areas and PX.

S10: POWER ON/OFF SWITCH

GRY BRN L BLU BLU AC POWER CORD

POWER TRANSFORMER

BLU BRN BLU BRN BLK

GRY WHT ORG RED BRN

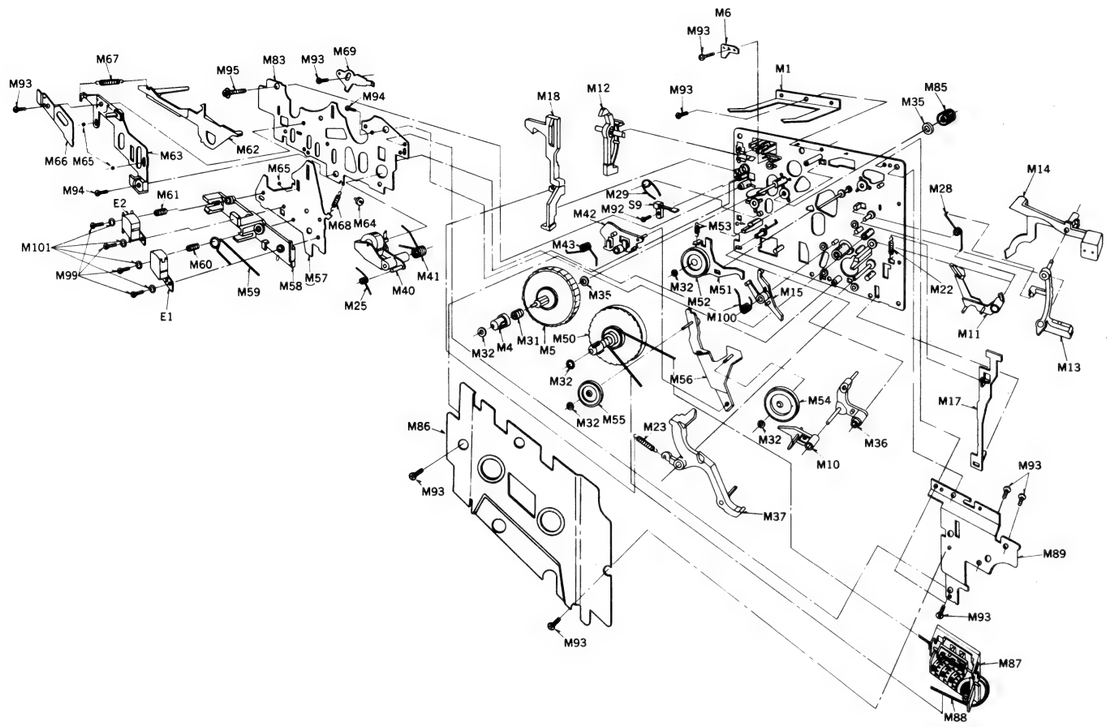
BLU WHT ORG BRN RED

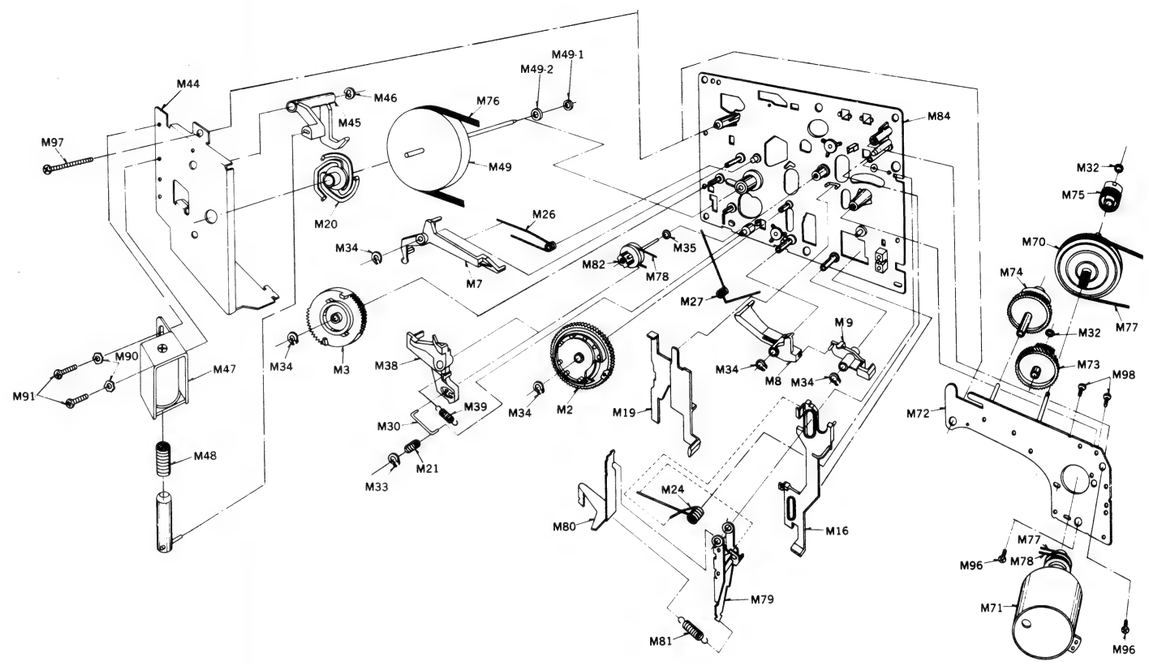
BLU BLK BLU BRN BRN

S12: VOLTAGE SELECT SWITCH

※For Australia.

EXPLODED VIEWS





Ref. No.	Part No.	Part Name & Description
	MECHANICAL PARTS	
M1	QBP1874	Cassette Pressure Spring
M2	QDG1201	Main Gear
M3	QDG1202	Sub Gear
M4	QMB1336	Supply Reel Table Hub
M5	QDR1139	Supply Reel Table
M6	QMF2118	Fast Forward Arm Bracket
M7	QML3581	Sub Control Lever
M8	QML3583	Main Control Lever
M9	QML3584	Record Operation Lever
M10	QML3586	Head Base Plate Lift Lever
M11	QML3594	Auto-Stop Release Arm
M12	QML3603	Erase Safety Lever
M13	QML3604	Auto-Stop Driving Lever
M14	QML3605	Auto-Stop Detection Lever
M15	QML3592	Change Lever
M16	QMR1820	Record Rod
M17	QMR1821	Auto-Stop Connection Rod
M18	QMR1822	Eject Rod
M19	QMR1824	Control Rod
M20	QMZ1239	Flywheel Thrust Retainer

Ref. No.	Part No.	Part Name & Description
M21	QBC1357	Lock Pin Pressure Spring
M22	QBT1682	Auto-Stop Connection Rod Spring
M23	QBT1894	Main Lever Spring
M24	QBN1739	Selection Lever Spring
M25	QBN1742	Pressure Roller Release Spring
M26	QBN1744	Sub Gear Spring
M27	QBN1745	Main Gear Spring
M28	QBN1746	Auto-Stop Lever Spring
M29	QBN1747	Connection Spring
M30	QBS1128	Lock Pin
M31	QBC1306	Reel Table Spring
M32	QBW2008	Poly Washer 2φ
M33	XUB4FT	Stop Ring 4φ
M34	XUB3FT	Stop Ring 3φ
M35	QBW2012	Poly Washer
M36	QXL1354	Sub Lever Assembly
M37	QXL1355	Main Lever Assembly
M38	QML3582	Pause Lock Lever
M39	QBT1896	Lever Release Spring
M40	QXL1381	Pressure Roller Assembly
M41	QBN1743	Pressure Roller Spring

Ref. No.	Part No.	Part Name & Description
M42	QML3588	Fast Forward Lever
M43	QBN1748	Fast Forward Spring
M44	QXA1042	Plunger Angle Assembly
M45	QML3607	Pause Driving Lever
M46	XUC3FT	Stop Ring 3φ
M47	QME0157	Plunger
M48	QBC1358	Plunger Release Spring
M49	QXF0164	Flywheel Assembly
M49-1	QBW2049	Poly Washer
M49-2	QBW2026	Washer
M50	QXD1143	Takeup Reel Table Assembly
M51	QXL1382	Idler Lever Assembly
M52	QXI0111	Takeup Idler Assembly
M53	QBT1893	Takeup Idler Spring
M54	QXI0113	Fast Forward Idler Assembly
M55	QXI0112	Rewind Idler Assembly
M56	QXL1383	Fast Forward Arm Assembly
M57	QMK1840	Head Base Plate
M58	QMZ1241	Head Spacer
M59	QBN1740	Head Pressure Spring
M60	QBC1278	Head Spring
M61	QBCA0008	〃

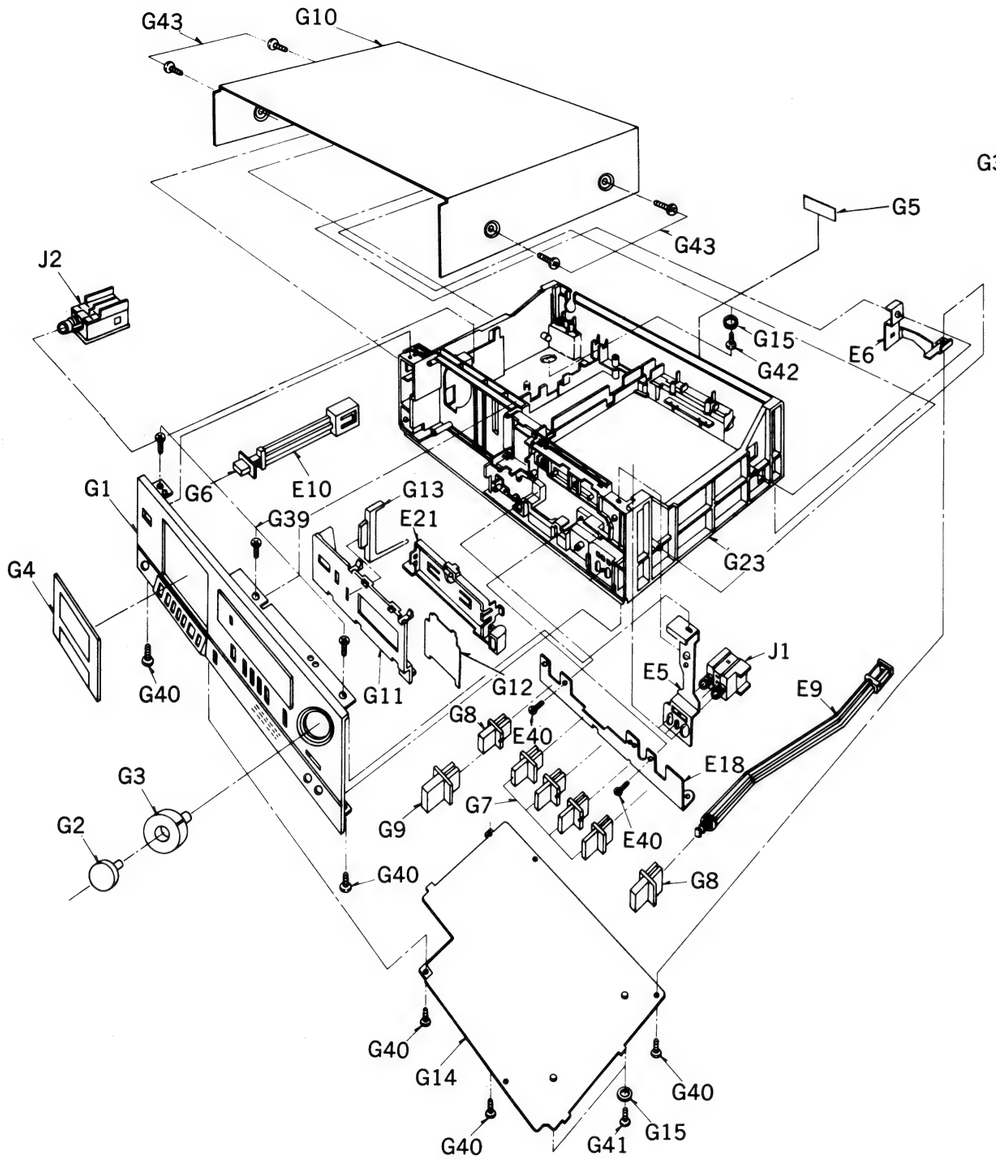
Ref. No.	Part No.	Part Name & Description
M62	QML3591	Brake Arm
M63	QMZ1240	Sub Head Base Plate
M64	QMN2550	Roller
M65	QDK1017	Steel Ball 2φ
M66	QBP1873	Head Base Plate Pressure Spring
M67	QBT1597	Brake Arm Spring
M68	QBT1892	Head Release Spring
M69	QMA3858	Pressure Roller Adjustment Plate
M70	QXG1047	Takeup Gear Assembly
M71	QXU0170	Motor Assembly
M72	QXK2286	Sub Chassis Assembly
M73	QDG1199	Auto-Stop Gear
M74	QDG1200	Cam Gear
M75	QDP1823	Connection Pulley
M76	QDB0281	Capstan Belt
M77	QDB0273	Fast Forward Belt
M78	QDB0274	Takeup Belt
M79	QXL1360	Record/Playback Selection Arm Assembly,
M80	QML3580	Record/Playback Selection Lever
M81	QBT1895	Record/Playback Selection Lever Spring

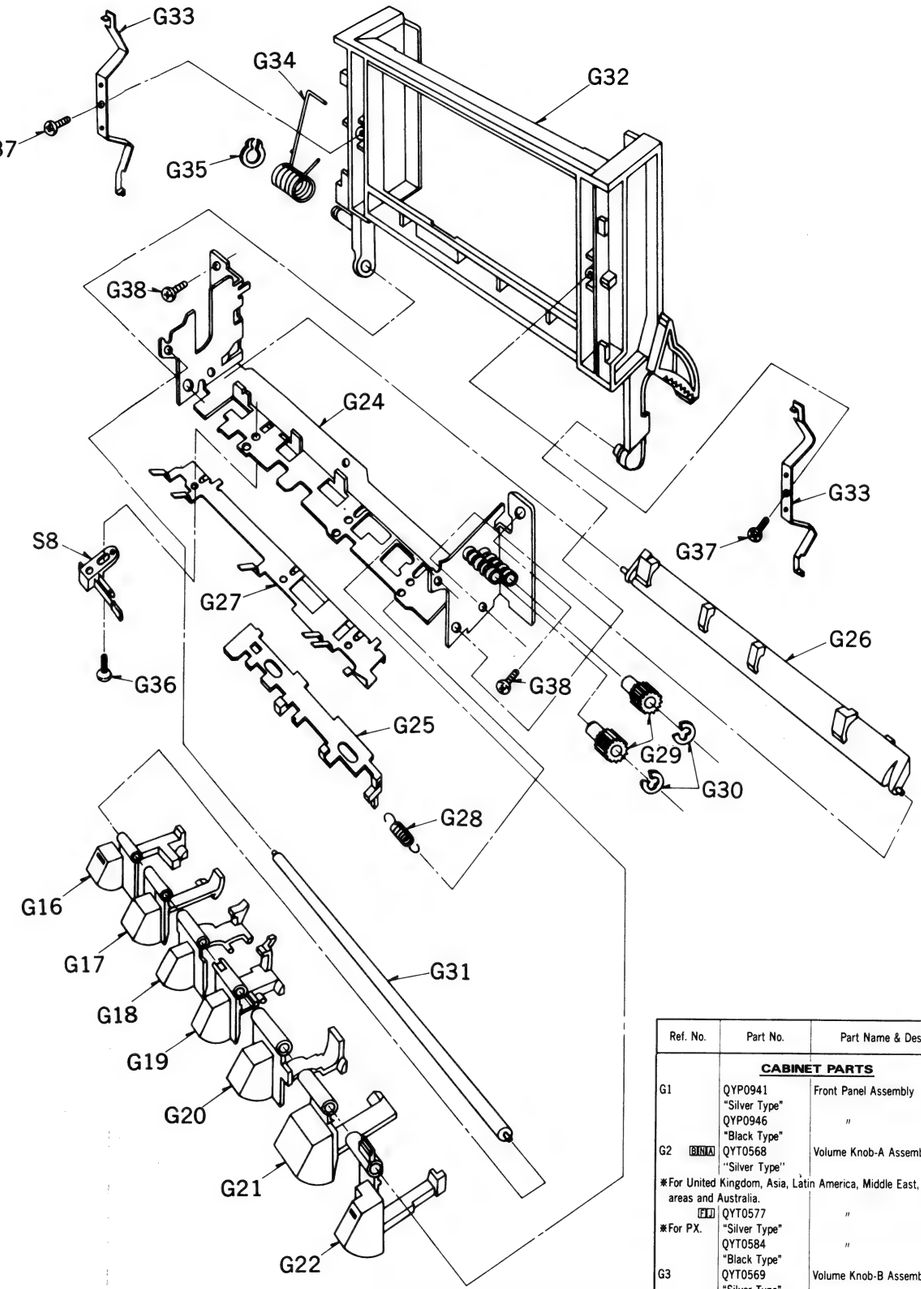
Ref. No.	Part No.	Part Name & Description
M82	QXP0607	Fast Forward Connection Pulley Assembly
M83	QMK1838	Upper Base Plate
M84	QXK2276	Lower Base Plate
M85	QDP1828	Fast Forward Pulley
M86	QXH0327	Chassis Cover Assembly
M87	QXC0060	Tape Counter
M88	QDB0240	Counter Belt
M89	QMA3860	Counter Angle
M90	XWC3B	Washer 3φ
M91	XSN3+6S	Screw ⊕3×6
M92	XTN2+6B	Tapping Screw ⊕2×6
M93	XTN26+6B	Tapping Screw ⊕2.6×6
M94	XTN26+10B	Tapping Screw ⊕2.6×10
M95	XTN26+12B	Tapping Screw ⊕2.6×12
M96	XTN3+10B	Tapping Screw ⊕3×10
M97	XTN3+24B	Tapping Screw ⊕3×24
M98	XSN26+3S	Screw ⊕2.6×3
M99	XSN2+10	Screw ⊕2×10
M100	QBN1741	Change Lever Spring
M101	XWA2	Washer 2φ

SPECIFICATIONS

Pressure of pressure roller	350±50 gr
Takeup tension * Use cassette torque meter ··· QZZSRKCT	45^{+15}_{-10} gr-cm
Wow and flutter; (JIS) * Use test tape ··· QZZCWAT	Less than 0.06% (WRMS)

CABINET PARTS





Ref. No.	Part No.	Part Name & Description
	CABINET PARTS	
G1	QYP0941	Front Panel Assembly
	"Silver Type"	
	QYP0946	"
	"Black Type"	
G2 BNA	QYT0568	Volume Knob-A Assembly
	"Silver Type"	
✻For United Kingdom, Asia, Latin America, Middle East, Africa areas and Australia.		
FJ	QYT0577	"
✻For PX.	"Silver Type"	
	QYT0584	"
	"Black Type"	
G3	QYT0569	Volume Knob-B Assembly
	"Silver Type"	
	QYT0585	"
	"Black Type"	
G4	QYF0409	Cassette Lid Assembly
	"Silver Type"	
	QYF0430	"
	"Black Type"	

Ref. No.	Part No.	Part Name & Description
G5 BA	QGS2765	Main Name Plate
✻For United Kingdom and Australia.		
N	QGS2790	"
✻For Asia, Latin America, Middle East and Africa areas.		
FJ	QGS2792	"
✻For PX.		
G6	QGO1692	Power Button
	"Silver Type"	
	QGO1692K	"
	"Black Type"	
G7	QGO1693	Tape Select Button
	"Silver Type"	
	QGO1693K	Tape Select Button
	"Black Type"	
G8	QGO1694	Dolby NR/Input Select Button
	"Silver Type"	
	QGO1694K	"
	"Black Type"	
G9	QGO1695	Rec Mute Button
G10	QGC1182	Case Cover
	"Silver Type"	
	QGC1182K	"
	"Black Type"	
G11	QGK3008	Meter Cover
	"Silver Type"	
	QGK3039	"
	"Black Type"	
G12	QGL1142	Filter
G13	QGL1143	LED Holder
G14	QGC1183	Bottom Cover
G15	QKA1076	Rubber Foot
G16	QXL1363	Eject Button Assembly
G17	QXL1364	Record Button Assembly
G18	QXL1365	Rewind Button Assembly
G19	QXL1366	Fast Forward Button Assembly
G20	QXL1367	Playback Button Assembly
G21	QXL1368	Stop Button Assembly
G22	QXL1369	Pause Button Assembly
G23	QKM1414K	Main Case
G24	QXA1044	Operation Button Angle Assembly
G25	QMR1823	Obstruction Rod
G26	QML3593	Lock Arm
G27	QBP1875	Operation Lever Spring
G28	QBT1597	Obstruction Rod Spring
G29	QDG1102	Holder Gear
G30	XUC4FT	Stop Ring 4ϕ
G31	QMN2554	Operation Lever Shaft
G32	QKF6015K	Cassette Holder
G33	QBP1771	Holder Spring
G34	QBN1749	Eject Spring
G35	XUB5FT	Stop Ring 5ϕ
G36	XTN2+6B	Tapping Screw ⊕2×6
G37	XTN26+5B	Tapping Screw ⊕2.6×5
G38	XTN26+6B	Tapping Screw ⊕2.6×6
G39	XTS3+10B	Tapping Screw ⊕3×10
G40	XTN3+10B	"
G41	XTN4+8S	Tapping Screw ⊕4×8
G42	XTN4+10B	Tapping Screw ⊕4×10
G43	XTN4+10BFN	"
	"Silver Type"	
	XTN4+10BFZ	"
	"Black Type"	
	ACCESSORIES	
A1	RP023A	Connection Cord
A2 BA	QQT2789	Instruction Book
✻For United Kingdom and Australia.		
N	QQT2788	"
✻For Asia, Latin America, Middle East and Africa areas.		
FJ	QQT2787	"
✻For PX.		
A3 NA	QFTC30S011TZ	Demonstration Tape
✻For Asia, Latin America, Middle East, Africa areas and Australia.		
A4 N	QJP0603S	AC Plug Adaptor
✻For Asia, Latin America, Middle East and Africa areas.		
	PACKINGS	
P1 B	QPN3968	Inside Carton
✻For United Kingdom.		
N	QPN4005	"
✻For Asia, Latin America, Middle East and Africa areas.		
A	QPN3997	"
✻For Australia.		
FJ	QPN3992	"
✻For PX.		
P2	QPA0532	Cushion-L
P3	QPA0533	Cushion-R
P4 B	QPG1985	Pad
✻For United Kingdom.		
NA	QPS0434	"
✻For Asia, Latin America, Middle East, Africa areas and Australia.		
P5 BFJ	QPA0543	Spacer
✻For United Kingdom and PX.		
A	QPA0562	"
✻For Australia.		
P6	XZB40X60A02	Poly Bag

ARD
HM B N NA A F J
Printed in Japan

RS-M24 DEUTSCH

Messungen und Einstellungen

Anm.:

Für gute Meßbedingungen sorgen. Falls nicht anders angegeben, die Schalter und Regler in folgende Positionen stellen.

- Für saubere Köpfe sorgen.
- Für saubere Tonwelle und Andruckrolle sorgen.
- Auf normale Raumtemperature achten: 20±5°C
- Dolby-Schalter: Aus.
- Bandwahl Schalter: Normal-Position.
- Spitzenwertschalter: LINE.
- Eingangsregler: MAX.

Gegenstand	Messung und Einstellung
Ⓐ Tonkopf-Positionierung Bedingung * Wiedergabe und Pause	Die Tonkopf-Positionierplatte dient zum Einstellen des Kontakts zwischen Tonkopf und Band während der Betriebszustände „Cue" und „ Review". 1. Die Wiedergabetaste PLAY und die Pausetaste drücken. 2. Den Abstand zwischen der Andrucksrolle und der Tonwelle messen. Sollwert: 0,5±0,3cm 3. Falls der Meßwert außerhalb des Toleranzbereichs liegt, die Schraube A lösen und die Tonkopf-Positionierplatte in Pfeilrichtung B schieben, um den Kopfkontakt einzustellen.
Ⓑ Senkrechtstellen des Kopfes Bedingung * Wiedergabe Meßgerät: * Röhrenvoltmeter * Oszillograf * Testband...QZZCFM	**Justage des Aufnahme/Wiedergabekopfes** 1. Den Meßaufbau zeigt Fig. 11. 2. Testband (QZZCFM, 8kHz) wiedergeben. 3. Einstellschraube (B) (Fig. 12) auf maximale Ausgangsspannung einstellen. 4. Beide Kanäle überprüfen und auf gleiche Ausgangsspannung einstellen. 5. Nach dem Abgleich Einstellschraube mit Lack sichern.
Ⓒ Bandgeschwindigkeit Bedingung * Wiedergabe Meßgerät: * Elektronischer Digitalzähler * Testband...QZZCWAT	**Genauigkeit der Bandgeschwindigkeit** 1. Den Meßaufbau zeigt Fig. 13. 2. Testband (QZZCWAT 3000Hz) wiedergeben und Ausgangssignal dem Zähler zuführen. 3. Frequenz messen. 4. Beträgt die auf dem Testband aufgezeichnete Frequenz 3000Hz, so ergibt sich die Genauigkeit nach folgender Formal: Genauigkeit der Bandgeschwindigkeit = $\frac{f-3000}{3000}\times 100(\%)$ worin f die gemessene Frequenz ist. 5. Die Messung soll im mittleren Teil des Bandes erfolgern. **NORMALWERT: ±1,5%** **Einstellung:** 1. Den mittleren Teil des Testbandes wiedergeben. 2,3. Die Einstellschraube VR Vgl Fig.27so verstellen, daß eine Frequenz von 3000Hz angezeig wird. **Schwankung der Bandgeschwindigkeit:** Messung, wieoben beschrieben für Anfang, mittleren Teil und Ende des Testbandes wiederholen und Schwankung wie folgt bestimmen: Schwankung = $\frac{f_1-f_2}{3000}\times 100(\%)$ f_1 = Maximalwert f_2 = Minimalwert **NORMALWERT: 1%**

Gegenstand	Messung und Einstellung
Ⓓ Frequenzgang bei Wiedergabe Bedingung: * Wiedergabe Meßgerät: * Röhrenvoltmeter * Oszillograf * Testband...QZZCFM	1. Den Meßaufbau zeigt Fig. 11, jedoch ist jetzt das Testband QZZCFM zu verwenden. 2. Gerät auf "wiedergabe" schalten. 3. Frequenzgang-Testband QZZCFM wiedergeben. 4. Ausgangsspannungen bei 12,5kHz, 10kHz, 8kHz, 4kHz, 1kHz, 250Hz, 125Hz und 63Hz mit Ausgangsspannung der Standard Frequenz 315Hz vergieichen. 5. Messungen an beiden Kanälen durchführen. 6. Prüfen, ob die Werte innerhalb der in Fig. 14 dargestellten Kurven liegen.
Ⓔ Wiedergabe-Verstärkung Bedingung * Wiedergabe Meßgerät: * Röhrenvoltmeter * Oszillograf * Testband...QZZCFM	1. Den Meßaufbau zeigt Fig. 11. 2. Standard-Frequenz (QZZCFM 315Hz) vom Testband wiedergeben und Ausgangsspannung messen. 3. Messung an beiden Kanälen durchführen. **NORMALWERT: Ungefähr 0,7V** **Einstellung:** 1. Abweichungen können durch Abgleich von VR3 (Linker Kanal) und VR4 (Rechter Kanal) (S. Fig.27) korrigiert werden. 2. Nach effolgtem Abgleich ist der Frequenzgang bei Wiedergabe erneut zu kontrollieren.
Ⓕ Störstrahlung der Vormagnetisierung Bedingung: * Aufnahme Meßgerät: * Elekeronisches Voltmeter * Oszillograf	1. Den Meßaufbau zeigt Fig. 15. 2. Gerät auf Aufnahme schalten. 3. Sperrkreisspulen L3 (Linker Kanal) und L4 (Rechter Kanal) so abgleichen daß der Meßwert minimal wird. (S. Fig. 27). 4. Beide Kanäle abgleichen.
Ⓖ Löschstrom Bedingung: * Aufnahme * Band Schalter ...Metal position ...CrO_2 position ...Fe-Cr position ...Normal position Meßgerät: * Röhrenvoltmeter * Oszillogeraf	1. Den Meßaufbau zeigt Fig. 16. 2. Die Aufnahme-und Pausentaste drücken. 3. Den Bandwahlschalter in die „Metal"-Position stellen. 4. Löschstrom nach folgender Formel emitteln: Löschstrom (A) = $\frac{\text{Die Spannung über beide Enden von R301}}{\text{1 (Ohm)}}$ **NORMALWERT: 110±10mA (Metal position)** 5. Abweichungen können durch Abgleich von VR301 korrigiert werden. 6. Den Bandwahlschalter in jede Position stellen. 7. Überprüfen, ob der Meßwert im vorgeschriebenen Bereich liegt. **NORMALWERT: Ungefähr 65mA (CrO_2 position)** **Ungefähr 55mA (Fe-Cr position)** **Ungefähr 50mA (Normal position)**

Gegenstand	Messung und Eins
Ⓗ Vormagnetisierung Bedingung * Aufnahme * Band Schalter ...Metal position ...Normal position ...Fe-Cr position ...CrO_2 position Meßgerät: * Röhrenvoltmeter * Oszillograf	**A. Messung und Abstimmung für der M** 1. Den Meßaufbau zeigt Fig. 17. 2. Die Aufnahme-und Pausentaste d 3. Den Bandwahlschalter in die „Me 4. Spannung vom Röhrenvoltmeter a sierungsstrom nach folgender Fo Vormagnetisierungsstrom (A) = $\frac{\text{Spannung am Röhren}}{\text{10 (Ohm}}$ **NORMALWERT: 800±20μA** 5. Falls der gemessene Wert nicht d genden VR abgleiche. VR303 (L-ch), VR301 (R-ch). **B. Messung und Abstimmung für der N** 1. Den Band wahlschalter in die "N 2. Über prüfen, ob der Meßwert im v liegt. **NORMALWERT: Ungefähr** 3. Falls der gemessene Wert nicht d genden VR abgleichen. VR302 (L-ch), VR304 (R-ch). **C. Messung für die Fe-Cr Band CrO_2 Ba** 1. Den Bandwahlschalter in jede Po 2. Überprüfen, ob der Meßwert im vo liegt. **NORMALWERT: Ungefähr** **Ungefähr**
Ⓘ Fluorezenzmeter Bedingung: * Aufnahme * Eingangsregler...Max. * Bandwahlschalter ...Normal position Meßgerät: * Röhrenvoltmeter * NF-Generator * Abschwächer	1. Den Meßaufbau zeigt Fig. 22. 2. Wie aus Fig. 9 ersichtlich, hört der a storen Q304 und Q404 bestehende M auf, wenn der kollektor des Q403 mi 3. Signal vor 1kHz (–24dB) an die Line die Aufnahmetaste drücken. 4. ATT so abstimmen, daß der Ausgan Buchse 0,7V wird (Der Eingangspege als Standardpegel bezeichnet). 5. Justierung auf „–20dB". A. Den Abschwächer so einstellen, –20dB des Stand-Aufnahmepege B. VR401 so abgleichen, daß im Ber Segment –20dB aufleuchtet (NUR (S. Fig. 9) 6. Justierung auf "0dB". A. ATT so abstimmen, daß der Ausg OUT-Buchse 0,7V wird. B. VR402 so abgleichen, daß im Ber Standardpegel das Segment +1 d 7. Die Anleitungsschritte 5 bis 6 zweim 8. Die ATT einstellen; kontrollieren, ob ten, wenn der Eingangspegel 10dB h gel ist. (S. Fig. 21)

	Messung und Einstellung
	1. Den Meßaufbau zeigt Fig. 11, jedoch ist jetzt das Testband QZZCFM zu verwenden. 2. Gerät auf "wiedergabe" schalten. 3. Frequenzgang-Testband QZZCFM wiedergeben. 4. Ausgangsspannungen bei 12,5kHz, 10kHz, 8kHz, 4kHz, 1kHz, 250Hz, 125Hz und 63Hz mit Ausgangsspannung der Standard Frequenz 315Hz vergleichen. 5. Messungen an beiden Kanälen durchführen. 6. Prüfen, ob die Werte innerhalb der in Fig. 14 dargestellten Kurven liegen.
ng	1. Den Meßaufbau zeigt Fig. 11. 2. Standard-Frequenz (QZZCFM 315Hz) vom Testband wiedergeben und Ausgangsspannung messen. 3. Messung an beiden Kanälen durchführen. **NORMALWERT: Ungefähr 0,7V** **Einstellung:** 1. Abweichungen können durch Abgleich von VR3 (Linker Kanal) und VR4 (Rechter Kanal) (S. Fig.27) korrigiert werden. 2. Nach effolgtem Abgleich ist der Frequenzgang bei Wiedergabe erneut zu kontrollieren.
r	1. Den Meßaufbau zeigt Fig. 15. 2. Gerät auf Aufnahme schalten. 3. Sperrkreisspulen L3 (Linker Kanal) und L4 (Rechter Kanal) so abgleichen daß der Meßwert minimal wird. (S. Fig. 27). 4. Beide Kanäle abgleichen.
	1. Den Meßaufbau zeigt Fig. 16. 2. Die Aufnahme-und Pausentaste drücken. 3. Den Bandwahlschalter in die „Metal"-Position stellen. 4. Löschstrom nach folgender Formel emitteln: Löschstrom (A) = Die Spannung über beide Enden von R301 / 1 (Ohm) **NORMALWERT: 110±10mA (Metal position)** 5. Abweichungen können durch Abgleich von VR301 korrigiert werden. 6. Den Bandwahlschalter in jede Position stellen. 7. Überprüfen, ob der Meßwert im vorgeschriebenen Bereich liegt. **NORMALWERT: Ungefähr 65mA (CrO_2 position) Ungefähr 55mA (Fe-Cr position) Ungefähr 50mA (Normal position)**

Gegenstand	Messung und Einstellung
Ⓗ Vormagnetisierung Bedingung * Aufnahme * Band Schalter ...Metal position ...Normal position ...Fe-Cr position ...CrO_2 position Meßgerät: * Röhrenvoltmeter * Oszillograf	**A. Messung und Abstimmung für der Metal-Band-Position.** 1. Den Meßaufbau zeigt Fig. 17. 2. Die Aufnahme-und Pausentaste drücken. 3. Den Bandwahlschalter in die „Metal"-Position stellen. 4. Spannung vom Röhrenvoltmeter ablesen und Vormagnetisierungsstrom nach folgender Formel berechnen: Vormagnetisierungsstrom (A) = Spannung am Röhrenvoltmeter (V) / 10 (Ohm) **NORMALWERT: 800±20μA (Metal position)** 5. Falls der gemessene Wert nicht der Toleranz liegt, die folgenden VR abgleiche. VR303 (L-ch), VR301 (R-ch). **B. Messung und Abstimmung für der Nornal-Band-Position.** 1. Den Band wahlschalter in die "Normal"-Position stellen. 2. Über prüfen, ob der Meßwert im vorgeschriebenen Beriech liegt. **NORMALWERT: Ungefähr 370μA (Normal position)** 3. Falls der gemessene Wert nicht der Toleranz liegt, die folgenden VR abgleichen. VR302 (L-ch), VR304 (R-ch). **C. Messung für die Fe-Cr Band CrO_2 Band Position.** 1. Den Bandwahlschalter in jede Position stellen. 2. Überprüfen, ob der Meßwert im vorgeschriebenen Bereich liegt. **NORMALWERT: Ungefähr 390μA (Fe-Cr position) Ungefähr 500μA (CrO_2 position)**
Ⓘ Fluorezenzmeter Bedingung: * Aufnahme * Eingangsregler...Max. * Bandwahlschalter ...Normal position Meßgerät: * Röhrenvoltmeter * NF-Generator * Abschwächer	1. Den Meßaufbau zeigt Fig. 22. 2. Wie aus Fig. 9 ersichtlich, hört der astabile, aus den Transistoren Q304 und Q404 bestehende Multivibrator zu schwingen auf, wenn der kollektor des Q403 mit Mass verbunden wird. 3. Signal vor 1kHz (−24dB) an die Line IN-Buchse eingeben und die Aufnahmetaste drücken. 4. ATT so abstimmen, daß der Ausgangspegel an der LINE OUT-Buchse 0,7V wird (Der Eingangspegel in dieser Stellung wird als Standardpegel bezeichnet). 5. Justierung auf „−20dB". A. Den Abschwächer so einstellen, daß der Eingangspegel −20dB des Stand-Aufnahmepegels berträge. B. VR401 so abgleichen, daß im Bereich von −20±0,8dB das Segment −20dB aufleuchtet (NUR LINKER KANAL). (S. Fig. 9) 6. Justierung auf "0dB". A. ATT so abstimmen, daß der Ausgangspegel an der LINE OUT-Buchse 0,7V wird. B. VR402 so abgleichen, daß im Bereich von ±0,2dB um den Standardpegel das Segment +1dB aufleuchtet. (S. Fig. 20) 7. Die Anleitungsschritte 5 bis 6 zweimal wiederholen. 8. Die ATT einstellen; kontrollieren, ob alle Segmente aufleuchten, wenn der Eingangspegel 10dB höher als der Standardpegel ist. (S. Fig. 21)

Gegenstand	Messung und Einstellung
Ⓙ Dolby-Schaltung Bedingung: * Aufnahme * Eingangsregler...Max. Meßgerät: * Röhrenvoltmeter * NF-Generator * Abschwächer * Oszillograf	1. Gerät in Stellung "Aufnahme" betreiben und Dolby-Schalter ausschalten. Dem NF-Eingang ein 5kHz-Signal zuführen, daß an TP9 (Linker Kanal) und TP10 (Rechter Kanal) −34,5dB erhalten werden. 2. Prüfen, ob das Signal bei eingeschaltetem Dolby-Schalter um 8 (±2,5) dB größer ist als bei ausgeschaltetem Dolby-Schalter.
Ⓚ Gesamt-Verstärkung Bedingung * Aufnahme und Wiedergabe * NF-Eingangsregler...Max. * Standard-Eingangspergel Mikrofon −72±4dB NF-Eingang −24±4dB Meßgerät: * NF-Generator * Röhrenvoltmeter * Abschwächer * Oszillograf * Testband (Leerband) QZZCRA für Normal	1. Den Meßaufbau zeigt Fig. 22. 2. Gerät auf "Aufnahme", und Bandwalschalter auf Normal Position stellen. 3. Über den Abschwächer 1kHz aus dem NF-Generator (−24dB) dem NF-Eingang zuführen. 4. Den Abschwächer so einstellen, daß am NF-Ausgang stehen. 0,7V stehen. 5. Dieses Signal auf Testband (QZZCRA) aufnehmen. 6. Diese Aufnahme wiedergeben und prüfen, ob am NF-Ausgang 0,7V stehen. 7. Ist des nicht der Fall, so sind VR5 (Linker Kanal) und VR6 (Rechter Kanal) entsprechend abzugleichen (S. Fig. 9), 8. Ab Punkt 2 wiederholen.
Ⓛ Gesamt-frequenzgang Bedingung * Aufnahme und Wiedergabe * Eingangsregler...Max. * Band Schalter ...Normal position ...Fe-Cr position ...CrO_2 position ...Metal position Meßgerät: * Röhrenvoltmeter * NF-Generator * Abschwächer * Testband (Leerband) QZZCRA für Normal QZZCRY für Fe-Cr QZZCRX für CrO_2 QZZCRZ für Metal	Anm.: Vor Messung und Abgleich des Gesamtfrequenzganges ist sicherzustellen, daß der Frequenzgang bei Wiedergabe korrekt ist (Vgl. entspr. Abschnitt). 1. Den Meßaufbau zeigt Fig. 22. 2. Testband (QZZCRA) in das Cassettenfach einsetzen. 3. Gerät auf „Aufnahme" und Bandwahlschalter auf „Normal" schalten. 4. 1kHz vom NF-Generator über den Abschwächer dem NF-Eingang zuführen. 5. Den Abschwächer so einstellen, daß der Eingangspegel −20dB des Stand-Aufnahmepegels berträge. 6. Zu diesem Zeitpunkt beträgt der Ausgangspegel 0,07V. 7. Bei dem gleichen Pegel sind die Frequenzen 30Hz, 70Hz, 200Hz, 1kHz, 4kHz, 8kHz, 10kHz, 12kHz und 13kHz (14kHz für CrO_2 band order Fe-Cr band, 15kHz für Metal band) aufzunehme. 8. Diese Aufnahme wiedergeben und dabei die Abweichungen der Pegel der einzeinen Frequenzen vom 1kHz-Pegel in dB bestimmen. 9. Überzeugen Sie sich, ob der gemessene Wert in dem angegebenen Bereich liegt. (Siehe Diagramm für die Frequenzgange von Normal, Fig. 23). 10. Falls der gemessene Wert nicht der Toleranz liegt. Die folgenden VR abgleichen. VR302 (L-ch), VR304 (R-ch) **Anm.:** • Mit VR302 den linker Kanal genauso abgleichen. Um den linken Kanal weiter einzustellen, VR303 benutzen. • Wenn der Frequenzgang zwischen dem mitteleren und hohen Frequenzgang höher als der Standardwert wird, wie durch die feste Linie in Fig. 32 angezeigt, die Vormagnetisierungsstrom-Abstimmung durchführen. • Für die Messung des Vormagnetisierungsstromes sei auf den Abschnitt „Vormagnetisierung" hingewiesen. 11. Ab Punkt 2 wiederholen. 12. Nacheinander das Fe-Cr (QZZCRY), CrO_2 (QZZCRX) unt Metal (QZZCRZ) Testband verwenden. 13. Den Bandwahlschalter in jede Position stellen. 14. Auf die gleiche Weise wie zuvor messen. 15. Überzeugen Sie sich, ob der gemessene Wert in dem angegebenen Bereich liegt. (Siehe Diagramm für die Frequenzgänge von Fe-Cr, CrO_2 und Metal bande Fig. 24 und 25.)

RS-M24 FRANCAIS

MESURES ET REGLAGE

NOTA:

Pour garder l'appareil en bon état de marche, positionner les commuteurs á levier et les commandes dans les positions suivantes, sauf indication contraire.

- Vérifiez que les têtes soient propres.
- Vérifiez que le cabestan et le galetpressure soient propres.
- Température ambiante admissible: 20±5°C.
- Sélecteur de Dolby: OUT.
- Sélecteur de bande: position normale.
- Commutateur de test de crête: LINE.
- Commande de niveau: MAX.

SECTION	MESURES ET REGLAGES
Ⓐ Réglage de la position de la tôte CONDITION * Le mode de lecture et pause	Il y a une plaque de réglage de la tête pour ajuster le contact de bande de la tête en mode de repérage avant ou arrière. 1. Appuyer sur le bouton de lecture (PLAY) et le bouton de pause. 2. Mesurer l'espace qui sépare le galet presseur du cabestan. Valeur standard: 0.5±0.3cm 3. Si la valeur mesurée se trouve hors tolérances, desserrer la vis A, et glisser la plaque de réglage de la tête dans la direction de la flèche B pour effectuer le réglage.
Ⓑ Azimutage de tête CONDITION * Position lecture Equipement: * Voltmètre électronique * Oscilloscope * Bande étalon (azimutage)...QZZCFM	**Réglage de la tête d'enregistrement/lecture** 1. Branchez les appareils comme ci-dessous (Voir fig. 11). 2. Lisez la bande étalon d'azimutage (QZZCFM, 8kHz). 3. Réglez la vis d'orientation (B) fig. 12 de la tête d'enregistrement/lecture pour obtenir le niveau maximal à la sortie LINE OUT. 4. Mesurez les deux canaux, et ajustez les niveaux à égalite de tension de sortie. 5. Après réglage, bloquez la vis par une goutte de vernis.
Ⓒ Vitesse de défilement CONDITION * Position lecture Equipement: * Compteur électronique numérique ou fréquencemètre numérique * Bande étalon...QZZCWAT	**Précision de la vitesse de défilement** 1. Branchez les appareils comme ci-dessous. (Voir fig. 13). 2. Lisez la bande étalon (QZZCWAT, 3000Hz) et appliquez le signal de sortie au fréquencemètre. 3. Mesurez sa fréquence. 4. Sur la base de 3000Hz, déteminez la valeur à l'aide de la formule. $\text{Précision de vitesse} = \frac{f-3000}{3000} \times 100(\%)$ avec f = valeur mesurée. 5. Effectuez la mesure sur la partie médiane de la bande. **Valeur normale: ±1.5%** **Méthode de réglage** 1. Lisez la bande étalon (milieu). 2,3. Ajustez la vis de réglage de vitesse VR indiquée fig. 27 pour que la fréquence devienne égale à 3000Hz. **Eluctuations de vitesse de défilement** Faites les mesures de la même facon que ci-dessus (au début, au milieu et en fin de bande) et déterminez la différence entre les valeurs maximale et minimale, puis calculez comme suit. $\text{Fluctuations de vitesse} = \frac{f_1-f_2}{3000} \times 100(\%)$ f_1 = valeur maximale f_2 = valeur minimale **Valeur normale: 1%**

SECTION	MESURES ET REGLAGES
Ⓓ Réponse en fréquence à la lecture CONDITION * Position lecture Equipement: * Voltmètre électronique * Oscilloscope * Bande étalon...QZZCFM	1. Branchez les appareils de mesure comme pour "l'azimutage de tête", mais en utilisant la bande étalon (QZZCFM) au lieu de la bande étalon d'azimutage (voir fig. 11). 2. Placez l'appareil en position lecture. 3. Lisez la bande étalon de courbe de réponse (QZZCFM). 4. Mesurez les niveaux de sortie à 12.5kHz, 10kHz, 8kHz, 4kHz, 1kHz, 250Hz, 125Hz et 63Hz et comparez chaque niveau de sortie avec celui de la fréquence étalon de 315Hz, sur la borne LINE OUT. 5. Effectuez la mesure sur les deux canaux. 6. Vérifiez que les valeurs mesurées se situent à l'intérieur du gabarit de courbe de réponse.
Ⓔ Gain à la lecture CONDITION * Position lecture Equipement: * Voltmètre électronique * Oscilloscope * Bande éltalon...QZZCFM	1. Branchez les appareils comme ci-dessous. (Voir fig. 11). 2. Lisez la partie "niveau standard" de la bande étalon (QZZCFM, 315Hz) et mesurez le niveau de sortie, avec le voltmètre électronique, sur le jack LINE OUT. 3. Effectuez les mesures sur les deux canaux. **Valeur normale: Autour de 0.7V** **Réglage** 1. Si la valeur mesurée n'est pas correct, réglez VR3 (canal gauche) et VR4 (droit) (Voir fig. 27). 2. Après réglage, vérifiez à nouveau la "réponse en fréquence à la lecture".
Ⓕ Fuites de Prémagnétisation CONDITION * Position enregistrement Equipement: * Voltmètre électronique * Oscilloscope	1. Branchez les appareils comme ci-dessous (voir fig. 15). 2. Placez l'appareil en position enregistrement. 3. Réglez les bobines de la trappe L3 (canal gauche) et L4 (droit) pour que la mesure soit au minimum. (Voir fig. 9). 4. Effectuez ce réglage pour les deux canaux.
Ⓖ Courant d'effacement CONDITION * Position enregistrement * Sélecteur de bande ...position Metal ...position CrO_2 ...position Fe-Cr ...position Normal Equipement: * Voltmètre électronique * Oscilloscope	1. Branchez les appareils comme ci-dessous. (Voir fig. 16). 2. Appuyez sur les boutons d'enlegistrement et de pause. 3. Place le selecteur de bande à la position "Metal". 4. Déterminer le courant d'effacement avec la formule suivante. $\text{Courant d'effacement (A)} = \frac{\text{Tension aux bornes de la résistance R301 (V)}}{1(\Omega)}$ **Valeur normale: 110±10mA (position Metal)** 5. Si la valeur lue se trouve hors tolérances, régler VR301. 6. Passer sur chaque position du sélecteur de bande. 7. Vérifiez si la valeur mesurée correspond a la norme. **Valeur normale: Autour de 65mA (position CrO_2)** **Autour de 55mA (position Fe-Cr)** **Autour de 50mA (position Normal)**

SECTION	MESURES ET REGL
Ⓗ Courant de prémagnétisation CONDITION * Position enregistrement * Sélecteur de bande ...position Metal ...position Normal ...position Fe-Cr ...position CrO_2 Equipement: * Voltmétre électronique * Oscilloscope	**A. Mesure et Réglage de la position de l** 1. Branchez les appareils comme ci- 2. Appuyez sur les boutons dénlegist 3. Placer le sélecteur de bande à la p 4. Lisez la tension sur le voltmètre él courant de prémagnétisation selon Courant de prémagnétisation $= \frac{\text{Tension lue sur voltm.}}{10(\Omega)}$ **Valeur normale: 800±20μA (** 5. Si la valeur lue se trouve hors tolé (L-ch), VR304 (R-ch). **B. Mesure et Réglage de la position de l** 1. Changer la sélecteur de bande à la 2. Vérifiez si la valeur mesurée corres **Valeur normale: Autour de 3** 3. Si la valeur lue se trouve hors tolé (L-ch), VR304 (R-ch). **C. Mesure des positions des bandes au** 1. Passer sur chaque position du sél 2. Vérifiez si la valeur mesurée corres **Valeur normale: Autour de 3 Autour de 5**
Ⓘ Indicateur de niveau CONDITION * Position enregistrement * Commande de niveau ...MAX. * Selecteur de band ...position Normal Equipement: * Voltmètre électronique * Générateur AF * Atténuateur	1. Branchez les appareils comme sur la 2. Comme il est montré à la fig. 9, le bra teur de Q403 à la terre arrête les osci instable comprenant Q403 et Q404. 3. Alimenter d'un 1kHz (−24dB) a la fich ser le bouton d'enregistrement. 4. Régler le ATT de telle façon à ce que fiche "LINE OUT" devienne 0.7V (Le position est nommé le niveau d'entre 5. Réglage au "−20dB". A. Réglez l'atténuateur pour que le ni rieur de −20dB au niveau étalon d B. Réglez VR401 de tel façon que le s s'allume dans la zone de −20dB±0 (L-ch seulement) (Voir fig. 19). 6. Réglage au "0dB". A. Régler le ATT de telle façon à ce q la fiche "LINE OUT" devienne 0.7V B. Réglez VR402 de tel façon que le s s'allume dans la zone de 0±0.2dB dard (Voir fig. 20). 7. Répéter deux fois les étapes 5 à 6 ci- 8. Réglez l'ATT et vérifiez si tous les seg le niveau d'un signal d'entreé est aug sus du niveau d'entreé standard (Voir
Ⓙ Circuit Dolby CONDITION * Position enregistrement * Commande de niveau ...MAX.	1. Placez l'appareil en position enregistr Dolby en position OUT, puis applique l'entrée LINE IN pour obtenir −34.5dB et TP10 (droit).

	MESURES ET REGLAGES
nce à	1. Branchez les appareils de mesure comme pour "l'azimutage de tête", mais en utilisant la bande étalon (QZZCFM) au lieu de la bande étalon d'azimutage (voir fig. 11). 2. Placez l'appareil en position lecture. 3. Lisez la bande étalon de courbe de réponse (QZZCFM). 4. Mesurez les niveaux de sortie à 12.5kHz, 10kHz, 8kHz, 4kHz, 1kHz, 250Hz, 125Hz et 63Hz et comparez chaque niveau de sortie avec celui de la fréquence étalon de 315Hz, sur la borne LINE OUT. 5. Effectuez la mesure sur les deux canaux. 6. Vérifiez que les valeurs mesurées se situent à l'intérieur du gabarit de courbe de réponse.
e FM	1. Branchez les appareils comme ci-dessous. (Voir fig. 11). 2. Lisez la partie "niveau standard" de la bande étalon (QZZCFM, 315Hz) et mesurez le niveau de sortie, avec le voltmètre électronique, sur le jack LINE OUT. 3. Effectuez les mesures sur les deux canaux. **Valeur normale: Autour de 0.7V** **Réglage** 1. Si la valeur mesurée n'est pas correct, réglez VR3 (canal gauche) et VR4 (droit) (Voir fig. 27). 2. Après réglage, vérifiez à nouveau la "réponse en fréquence à la lecture".
e FM	1. Branchez les appareils comme ci-dessous (voir fig. 15). 2. Placez l'appareil en position enregistrement. 3. Réglez les bobines de la trappe L3 (canal gauche) et L4 (droit) pour que la mesure soit au minimum. (Voir fig. 9). 4. Effectuez ce réglage pour les deux canaux.
nt e	
nt nt e	1. Branchez les appareils comme ci-dessous. (Voir fig. 16). 2. Appuyez sur les boutons d'enlegistrement et de pause. 3. Place le selecteur de bande à la position "Metal". 4. Déterminer le courant d'effacement avec la formule suivante. Courant d'effacement (A) = Tension aux bornes de la résistance R301 (V) / 1(Ω) **Valeur normale: 110±10mA (position Metal)** 5. Si la valeur lue se trouve hors tolérances, régler VR301. 6. Passer sur chaque position du sélecteur de bande. 7. Vérifiez si la valeur mesurée correspond a la norme. **Valeur normale: Autour de 65mA (position CrO_2) / Autour de 55mA (position Fe-Cr) / Autour de 50mA (position Normal)**

SECTION	MESURES ET REGLAGES
(H) Courant de prémagnétisation CONDITION * Position enregistrement * Sélecteur de bande ...position Metal ...position Normal ...position Fe-Cr ...position CrO_2 Equipement: * Voltmétre électronique * Oscilloscope	**A. Mesure et Réglage de la position de la bande Metal.** 1. Branchez les appareils comme ci-dessous (Voir fig. 17). 2. Appuyez sur les boutons dénlegistrement et de pause. 3. Placer le sélecteur de bande à la position "Metal". 4. Lisez la tension sur le voltmètre électronique et calculez le courant de prémagnétisation selon la formule. Courant de prémagnétisation (A) = Tension lue sur voltm. élec. (V) / 10(Ω) **Valeur normale: 800±20μA (position Metal)** 5. Si la valeur lue se trouve hors tolérances, régler VR303 (L-ch), VR304 (R-ch). **B. Mesure et Réglage de la position de la bande Normal.** 1. Changer la sélecteur de bande à la position "Normal". 2. Vérifiez si la valeur mesurée corresпond a la norme. **Valeur normale: Autour de 370μA (position Normal)** 3. Si la valeur lue se trouve hors tolérances, régler VR302 (L-ch), VR304 (R-ch). **C. Mesure des positions des bandes au Fe-Cr et au CrO_2.** 1. Passer sur chaque position du sélecteur de bande. 2. Vérifiez si la valeur mesurée corresпond a la norme. **Valeur normale: Autour de 390μA (position Fe-Cr) / Autour de 500μA (position CrO_2)**
(I) Indicateur de niveau CONDITION * Position enregistrement * Commande de niveau ...MAX. * Selecteur de band ...position Normal Equipement: * Voltmètre électronique * Générateur AF * Atténuateur	1. Branchez les appareils comme sur la fig. 22. 2. Comme il est montré à la fig. 9, le branchement de la collecteur de Q403 à la terre arrête les oscillations du multivibrateur instable comprenant Q403 et Q404. 3. Alimenter d'un 1kHz (−24dB) a la fiche "LINE IN", puis pousser le bouton d'enregistrement. 4. Régler le ATT de telle façon à ce que le niveau de sortie à la fiche "LINE OUT" devienne 0.7V (Le niveau d'entreé à cette position est nommé le niveau d'entree standard). 5. Réglage au "−20dB". A. Réglez l'atténuateur pour que le niveau d'entrée soit inférieur de −20dB au niveau étalon d'enregistrement. B. Réglez VR401 de tel façon que le segment de −20dB s'allume dans la zone de −20dB±0.8dB. (L-ch seulement) (Voir fig. 19). 6. Réglage au "0dB". A. Régler le ATT de telle façon à ce que le niveau de sortie à la fiche "LINE OUT" devienne 0.7V. B. Réglez VR402 de tel façon que le segment de +1dB s'allume dans la zone de 0±0.2dB du niveau d'entreé standard (Voir fig. 20). 7. Répéter deux fois les étapes 5 à 6 ci-dessus. 8. Réglez l'ATT et vérifiez si tous les segments s'allument quand le niveau d'un signal d'entreé est augmenté de 10dB au dessus du niveau d'entreé standard (Voir fig. 21).
(J) Circuit Dolby CONDITION * Position enregistrement * Commande de niveau ...MAX.	1. Placez l'appareil en position enregistrement et le sélecteur Dolby en position OUT, puis appliquez un signal à 5kHz à l'entrée LINE IN pour obtenir −34.5dB sur TP9 (canal gauche) et TP10 (droit).

SECTION	MESURES ET REGLAGES
Equipement: * Voltmètre électronique * Générateur AF * Atténuateur * Oscilloscope	2. Vérifiez que la valeur en position IN du sélecteur Dolby augmente de 8 (±2.5)dB par rapport à celle obtenue en position OUT.
(K) Gain global CONDITION * Positions enregistrement/lecture * Commande de niveau ...MAX. * Niveaux d'entrée normaux MIC −72±4dB LINE IN −24±4dB Equipement: * Générateur AF * Voltmètre électronique * Atténuateur * Oscilloscope * Bande étalon vierge QZZCRA pour type de bande normale	1. Branchez les appareils comme sur la fig. 22. 2. Placez l'appareil en position enregistrement, le sélecteur de bande sur position normale. 3. Appliquez un signal à 1kHz (−24dB) du générateur AF, à travers l'atténuateur, à l'entrée LINE IN. 4. Réglez l'atténuateur pour que le niveau d'écoute simultanée sur LINE OUT soit de 0.7V. 5. Faistes un enregistrement avec la bande étalon (QZZCRA). 6. Lisez la bande ainsi enregistrée, et vérifiez que la valeur lue sur le voltmètre électronique branché sur LINE OUT est bien de 0.7V. 7. Si la valeur mesurée est différente, réglez VR5 (canal gauche) et VR6 (droit) (voir fig. 27). 8. Recommencez à partir du palier (2).
(L) Courbe de réponse globale CONDITION * Positions enregistrement/lecture * Commande de niveau ...MAX. * Sélecteur de bande ...position Normal ...position Fe-Cr ...position CrO_2 ...position Metal Equipement: * Voltmètre électronique * Générateur AF * Atténuateur * Bande étalon vierge ...QZZCRA pour type Normal ...QZZCRY pour Fe-Cr ...QZZCRX pour CrO_2 ...QZZCRZ pour Metal	**Nota:** Avant de mesurer et régler, vérifiez que la courbe de réponse en lecture est correct (pour la méthode de mesure, reportez-vous au paragraph considéré). 1. Branchez les appareils de mesure comme surla fig. 22. 2. Mettre la cassette déssai (QZZCRA) en place dans le support de la cassette. 3 Placez l'appareil en position enregistrement, le sélecteur de bande sur "Normal". 4. Appliquez un signal à 1kHz du générateur AF, à travers l'atténuateur, à l'entrée LINE IN. 5. Réglez l'atténuateur pour que le niveau d'entrée soit inférieur de −20dB au niveau étalon d'enregistrement. 6. A ce moment, le niveau sur LINE OUT est de 0.07V. 7. Enregistrez les frequences de 30Hz, 70Hz, 200Hz, 1kHz, 4kHz, 8kHz, 10kHz, 12kHz et 13kHz (14kHz pour bande Fe-Cr/ band CrO_2, 15kHz pour band Metal) à niveau constant. 8. Lisez cet enregistrement et exprimez en dB les différences entre le niveau de sortie de chaque fréquence et le niveau à 1kHz. 9. S'assurer que la valeur mesurée se trouve dans la plage spécifiée dans le diagramme de la réponse en fréquences totale pour les bande Normal montre dans les fig. 23. 10. Si la valeur lue se trouve hors tolérances, regler VR302 (L-ch), VR304 (R-ch). **Nota:** • Le réglage normal du canal gauche se fait en utilisant VR302. Pour régler davantage le canal gauche, utiliser VR303. • Lorsque la réponse en fréquence entre la plage des fréquences moyennes et des fréquences élevées devient supérieure à la valeur standard, comme montré par la ligne continue dans la fig. 26, se référer au réglage du courant de polarisation. • Pour la mesure du courant de prémagnétisation, reportez-vous au paragraphe correspondant. 11. Recommencez à partir du palier 2. 12. Changer la bande déssai sur Fe-Cr (QZZCRY), CrO_2 (QZZCRX), Metal (QZZCRZ). 13. Passer sur chaque position du sélecteur de bande. 14. Efectuer la mesure de la même manière que ci-dessus. 15. Sássurer que la valeur mesurée se trouve dans la plage spécifiée dans le diagramme de la réponse en fréquences totale pour les bandes Fe-Cr, CrO_2 et Metal montré dans les fig. 24 et 25.

SERVICE NEWS

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Service Berater, Schulungsleiter

Nr.: 229	Datum: 28. März 1983 Herr Platzek,NPS-Mü/MH 13/83
THEMA	TEXT
RS-M 24	Betreff: Friktion der RS-M 24 Mechanik ist geändert worden.
Bandzug = 60 gr/cm	Symptom: Bandzug (Torque) zu hoch. Bei Bandzügen über 60 gr/cm kann es zur mechanischen Beschädigung des Bandanfanges kommen.
QZK 0241	Abhilfe: Nur noch die Friktion Take up gear assy QZK 0241 bestellen (= 55 gr/cm) und verwenden.
	NPS-HH W. Klingler